



Spetisbury
CE Primary School

Spetisbury Primary School Calculation Policy

Addition, Subtraction, Multiplication
and Division

Policy Aims

This policy is supported by the White Rose Maths Scheme and the NCETM ready to progress (RTP) exemplification material. The White Rose SoL & Calculation Policy have been adopted throughout the school and alongside this document, to ensure the use of a Mastery approach to teaching mathematics.

Progression within each area of the calculation policy is in line with the Mathematics Programme of Study from the National Curriculum 2013 as well as the non-statutory guidance 2020. Our mathematics curriculum has mastery of each topic at its core premise and it is intended that mathematical fluency and reasoning underpin each objective. Children should be exposed to problem solving and encouraged to make connections in order to apply their knowledge in other subject areas.

Throughout this document, the emphasis is put on the use of concrete, pictorial and abstract representations alongside formal written methods. Additionally, it ensures there are sufficient opportunities to explore mathematical language. It is vital that children understand why they are learning new mathematical skills and are encouraged to put each calculation into context from the very beginning of their learning journeys.

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Spetisbury
CE Primary School

Addition

Add, Addend, Plus, Sum, Increase, Total

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Year 1

Children begin by using toys, cubes, counters alongside other concrete objects to model counting on and totals up to 10.

Children should explore composing numbers to ten from 2 parts.

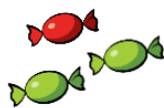
Children can explore aggregation (combining of sets) and augmentation (adding to a set).

Using the 'First, Then, Now' model can be used to create addition stories.

When using the '=' sign, children should be encouraged to say "Is equal to".

Concrete

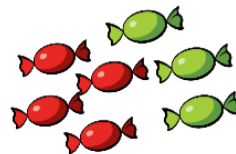
First



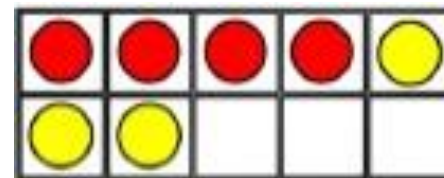
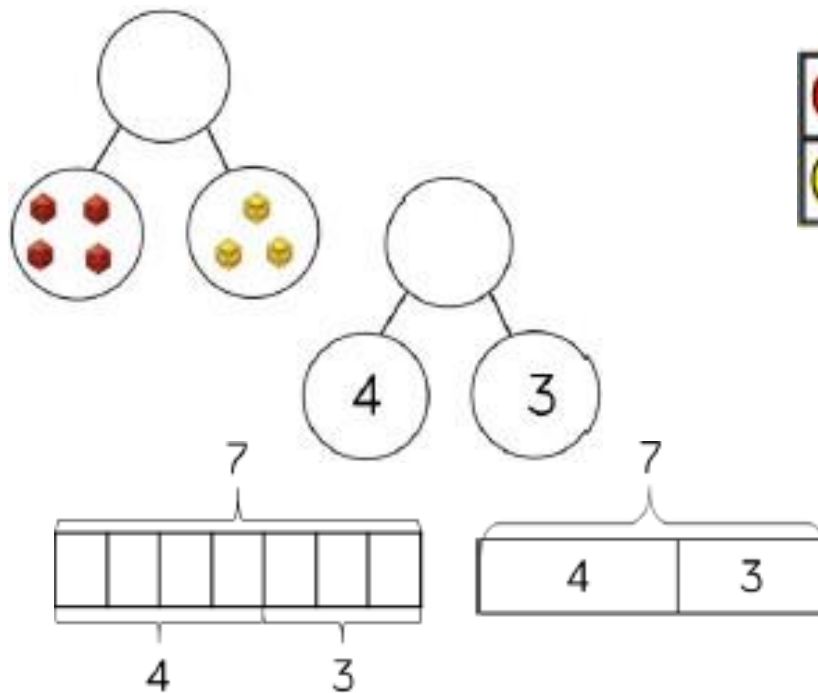
Then



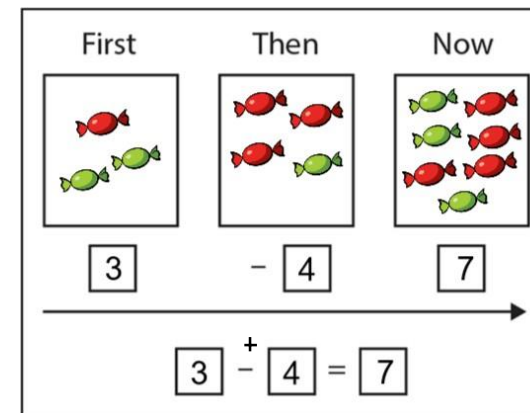
Now



Pictorial



Abstract



Language Focus – “There are 7 bears. 4 are blue, 3 are red.”
 “7 is the whole. 4 is a part. 3 is a part.”
 “4 add three is equal to 7.”

Year 1/2 transition

When adding ones that cross 10, it is important to highlight that ten ones is equal to 10.

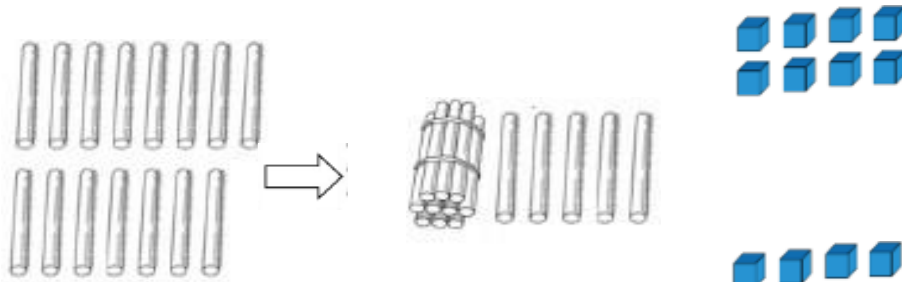
Children should explore composing numbers to ten from 2 parts. And should recognise the +, - and = symbols.

Using manipulatives alongside number lines and Base-10 blocks can help children when looking to count on or partition their 'jumps'.

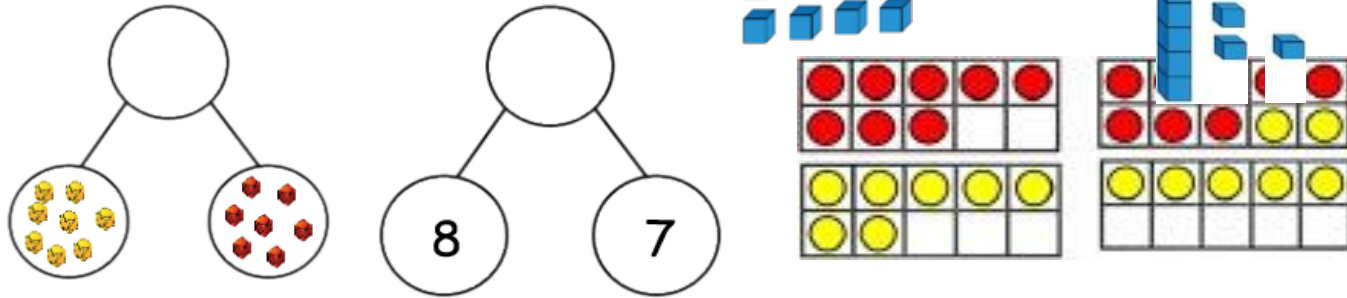
Children have a good understanding of base ten (tens and ones) as well as bar modelling ready for transition into Year 2.

When using the '=' sign, children should be encouraged to say "Is equal to".

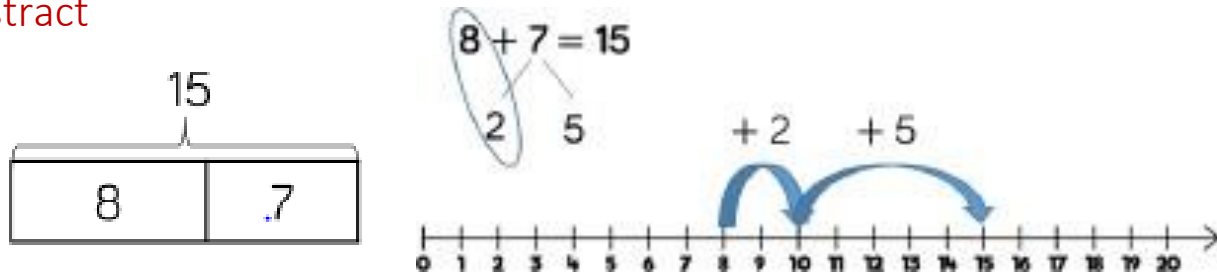
Concrete



Pictorial



Abstract



$$8 + 7 = 15$$

Language Focus – “There are 8 straws in one group and 7 straws in another group. There are 15 straws altogether.”
 “We can write this as 8 plus 7 is equal to 15.”
 “We can group 10 straws together then add on the remaining 5. This will give me 15 straws.”

Year 2

When adding more than 2 numbers, children should be encouraged to look for number bonds or doubles.

Children should be introduced to commutativity.

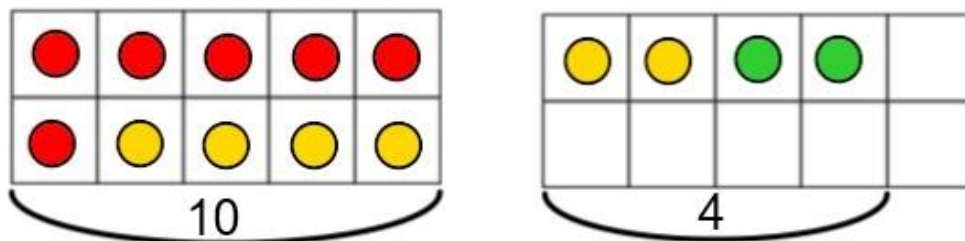
By the end of Year 2, children should be confident with the use of Base-10 represented as column addition and should be taught alongside formal column addition.

When using the '=' sign, children should be encouraged to say "Is equal to".

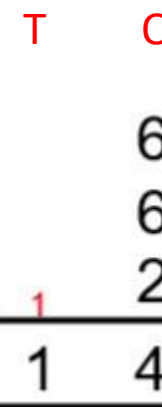
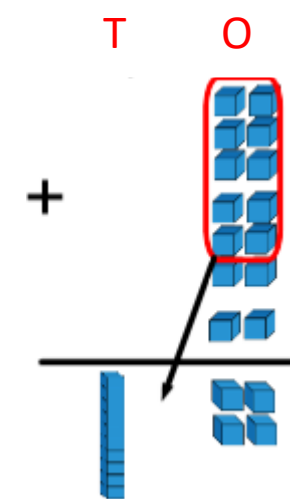
Concrete



Pictorial



Abstract



Language Focus – “We can use a making ten strategy to add past ten.”
“We can partition 6 into 4 and 2 to help make a ten.”
“When we have ten ones, we can exchange for a ten.”

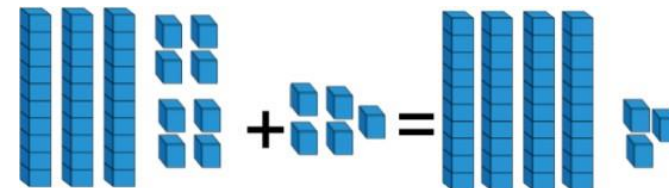
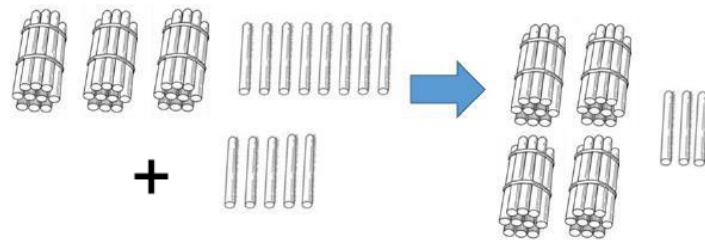
Year 2/3 transition

Adding 1-digit and 2-digit numbers to 100 should be attempted through the use of number line with children counting on from the larger number.

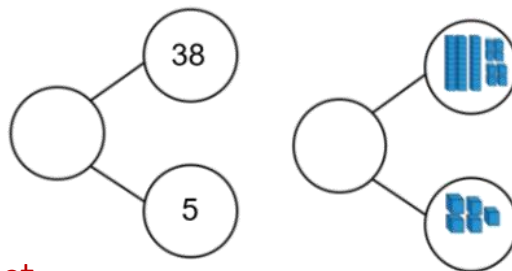
Children should be encouraged to apply number bonds to add more efficiently e.g. $8+5 = 13$ and so $38 + 3 = 41$.

Hundred squares can be used to support children to find number bonds to 10. Children should also be exposed to bar models to solve missing number questions.

Concrete

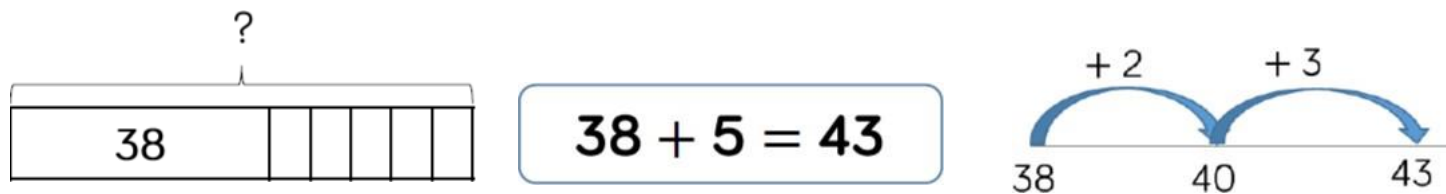


Pictorial



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

Abstract



Language Focus – “If I have 38 and I add 5, I can partition the 5 into a 2 and a 3 to make 43.”
 “When I am adding across a ten, I can exchange 10 ones for a ten.”
 “38 and 5 are both addends. 43 is my sum.”

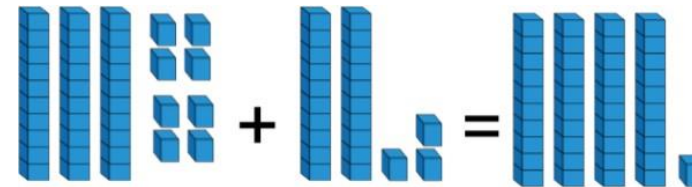
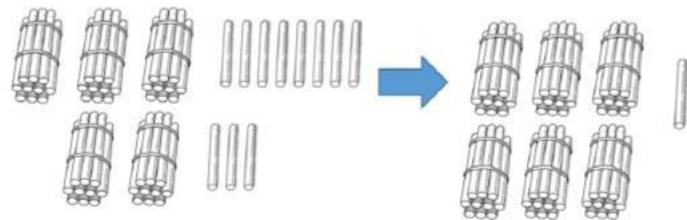
Year 2/3 transition

At this stage, encourage the use of the formal column method when calculating alongside straws, Base-10 or counters. As numbers become larger, straws become less efficient.

Children should be reminded that ten ones are equal to ten and we can exchange below the required column.

Children can also use a number line to count on and find a total. Encourage jumps of ten to become more efficient.

Concrete

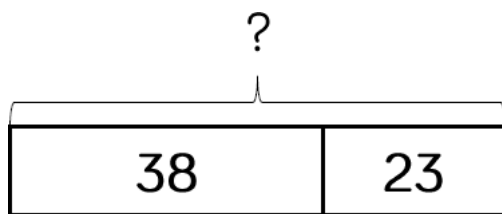


Pictorial

Tens	Ones

Tens	Ones

Abstract



$$38 + 23 = 61$$

	T O
	38
	+ 23
	61
	1

Language Focus – “3 plus 2 is equal to 5 so 3 tens add 2 tens is equal to 5 tens.”

“We can partition both addends to help up add efficiently.”

“First I can partition both numbers. Then I add the tens, then add the ones.”

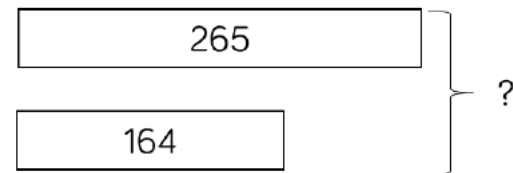
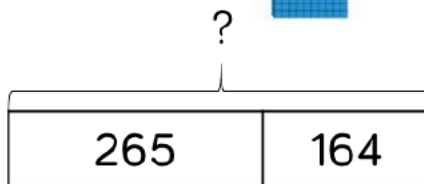
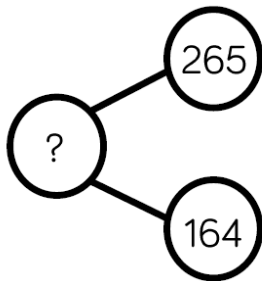
Year 3

Concrete/Pictorial

Hundreds	Tens	Ones
100 100	10 10 10 10 10 10	1 1 1 1 1
100	10 10 10 10 10 10	1 1 1 1

Hundreds	Tens	Ones
100 100	10 10 10 10 10	1 1 1 1 1
100	10 10 10 10 10	1 1 1 1

100



Abstract

$$265 + 164 = 429$$

H T O

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

$$\begin{array}{r} 4 \ 1 \ 6 \\ 2 \ 2 \ 3 \\ + 1 \ 8 \ 4 \\ \hline 8 \ 2 \ 3 \\ 1 \ 1 \end{array}$$

Language Focus – “10 ones are equivalent to 1 ten. 10 tens are equivalent to 1 hundred.”

“If the column sum is equal to ten or more, we must regroup.”

“When using written column method, I must ensure my columns align.”

At this stage, the use of counters or Base-10 are the most efficient manipulatives when adding numbers up-to 3 digits.

Children should use the formal method of addition alongside any use of concrete resources so they can see any links to the written column method. For some examples, encouraging children to look for bonds to ten, will help with regrouping.

Formal, written column addition should include the highlighting of Place Value ‘titles’ (H, T, O etc.)

Year 4

Concrete/Pictorial

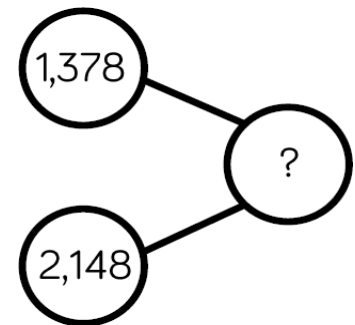
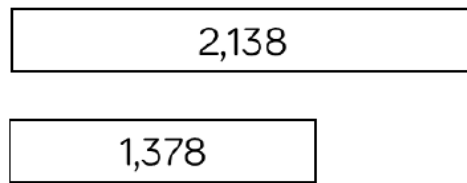
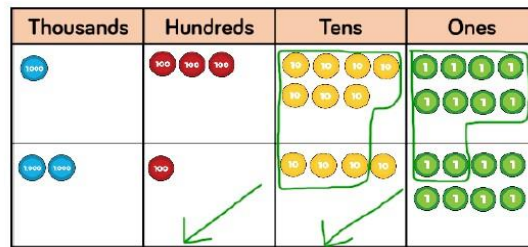
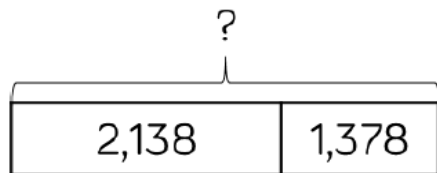
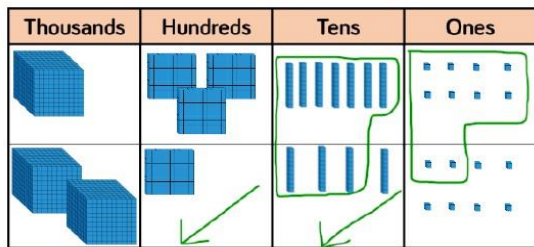
At this stage, the use of counters or Base-10 are the most efficient manipulatives when adding numbers up-to 4 digits.

Children should use the formal method of addition alongside any use of concrete resources so they can see any links to the written column method.

For some examples, encouraging children to look for bonds to ten, will help with regrouping.

The use of bars will help children unpick word questions, these should be used alongside the formal written method.

Formal, written column addition should include the highlighting of Place Value 'titles' (Th, H, T, O etc.)



Abstract

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

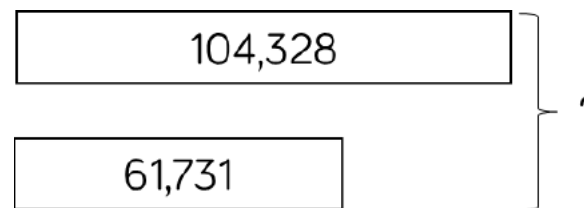
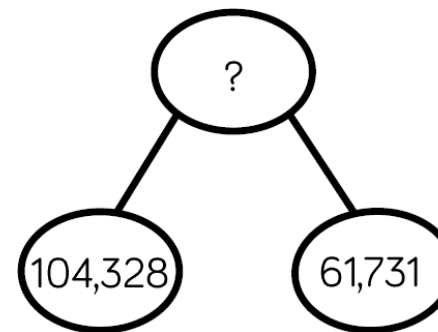
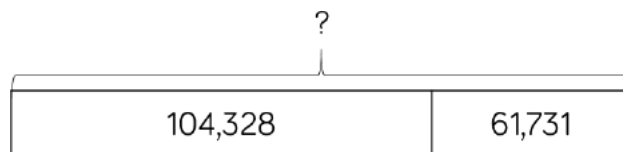
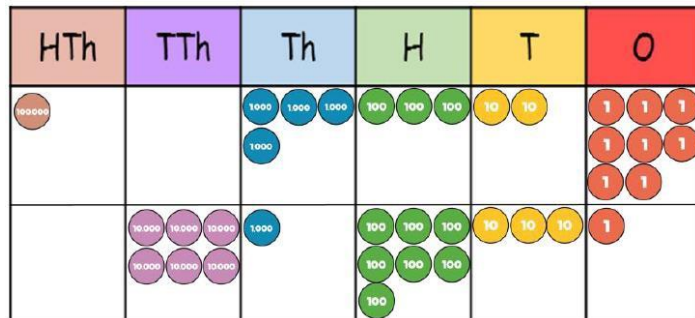
	Th	H	T	O
	1	3	7	8
+	2	1	4	8
	3	5	2	6
		1	1	

	Th	H	T	O
	3		2	7
+	1	5		1
	5	2	8	

Language Focus – “10 tens are equivalent to 1 hundred. 10 hundreds are equivalent to 1 thousand.”
 “If the column sum is equal to ten or more, we must regroup.”
 “When completing missing number questions, I should remember any exchanged numbers.”

Year 5/6

Concrete/Pictorial



Abstract

Hth Tth Th H T O

1	0	4	3	2	8
+	6	1	7	3	1
<hr/>					
1	6	6	0	5	9

1

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

At this stage, the use of counters are the most efficient manipulatives when adding numbers up-to 7 digits.

Children should use the formal method of addition alongside any use of concrete resources so they can see any links to the written column method.

The use of bars will once again help children unpick word questions, these should be used alongside the formal written method.

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

Language Focus – “10 thousands are equivalent to ten-thousand. 10 ten-thousands are equivalent to one hundred thousand.”

“If the column sum is equal to ten or more, we must regroup.”

“When completing missing number questions, I should remember any exchanged numbers.”



Spetisbury
CE Primary School

Subtraction

Subtract, Minuend, Subtrahend, Minus, Less,
Difference, Decrease, Take Away, Deduct

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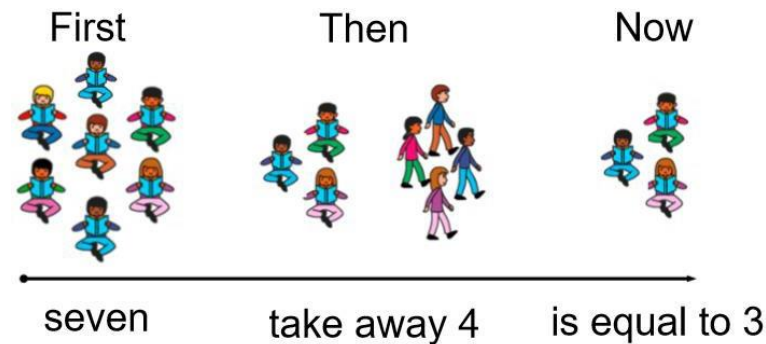
Year 1

When subtracting, children should be encouraged to 'take away' and 'look for the difference'. Subtraction can tell us about partitioning objects.

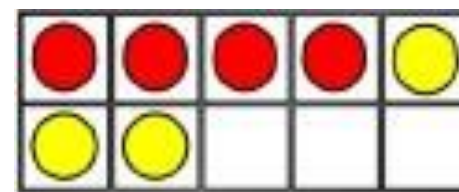
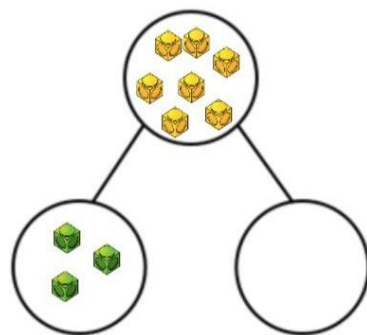
All of the models here support partitioning. The use of tens frames, and bar modelling support the term 'reduction'. Cubes and models with two bars can support the difference.

When using the '=' sign, children should be encouraged to say "Is equal to"

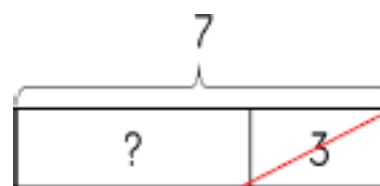
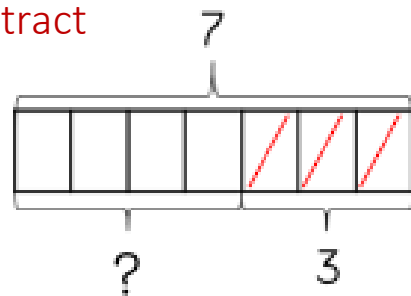
Concrete



Pictorial



Abstract



Language Focus – “If I take away three from seven, I have four left.”

“I have seven apples and I have three apples. The difference between them is four apples.”

Year 1/2 transition

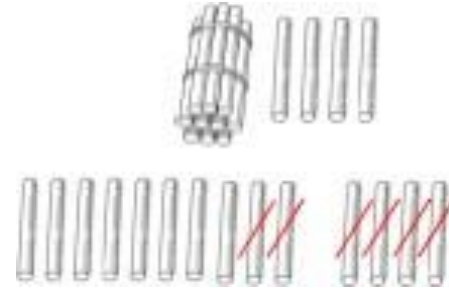
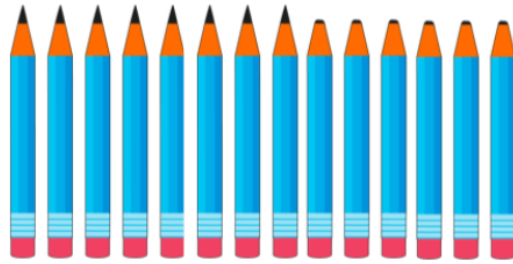
When subtracting one-digit numbers across a ten, it is important to highlight that one ten is equal to ten ones.

Children should be encouraged to find the number bonds to ten when partitioning the subtracted number.

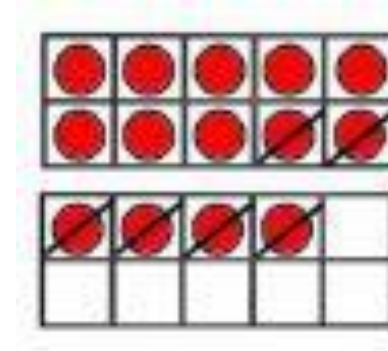
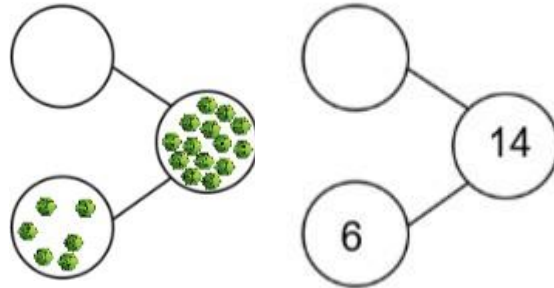
Children should be more familiar with the use of the bar model and Base 10/straws ready for Year 2.

When using the '=' sign, children should be encouraged to say "is equal to"

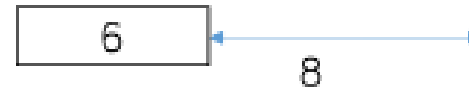
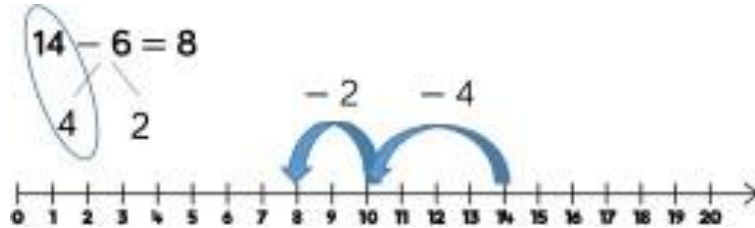
Concrete



Pictorial



Abstract



$$14 - 6 = 8$$

Language Focus – “If I have fourteen pencils, eight are sharp and six are not. We can write this as fourteen minus six is equal to eight.”

“The difference between 14 and 6 is 8.”

Year 2

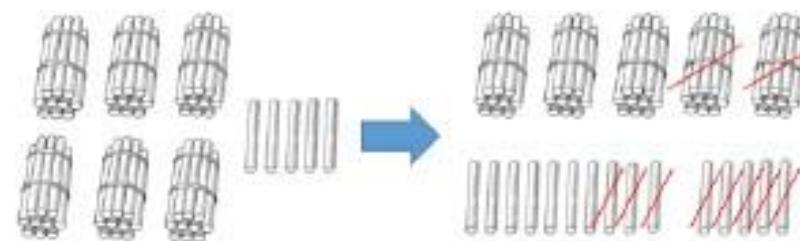
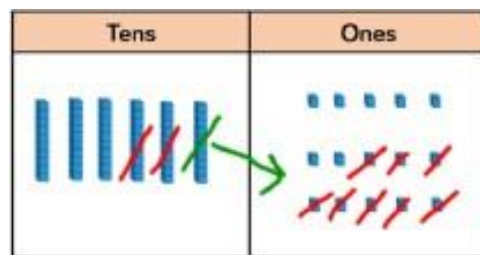
At this stage, children should be encouraged to partition their subtrahend into tens and ones.

Children should also be taught to regroup tens into ones when necessary.

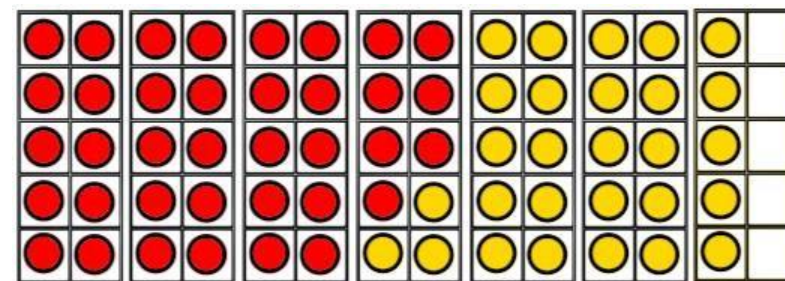
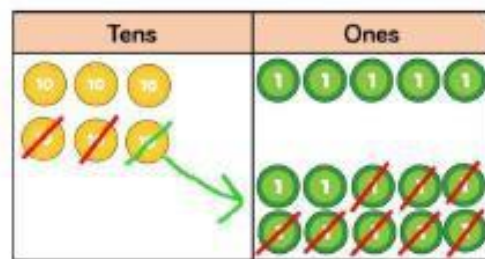
Children are encouraged to move towards a formal method of calculation alongside Base 10, counters or tens frames.

When using the '=' sign, children should be encouraged to say "Is equal to".

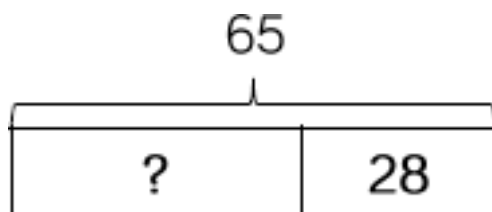
Concrete



Pictorial



Abstract



$$65 - 28 = 37$$

T	O
6 ⁵	5 ¹
2	8

3	7

Language Focus – “We can partition the subtrahend to help us subtract.”
 “We can regroup a ten into ten ones the help us subtract”.

Year 3

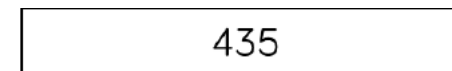
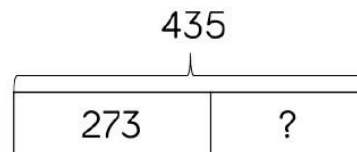
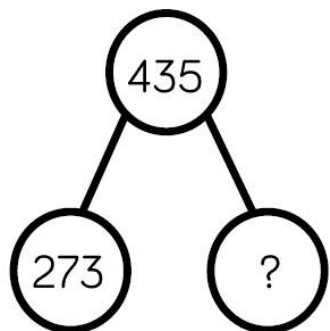
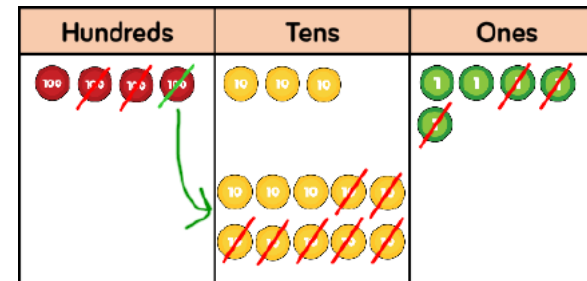
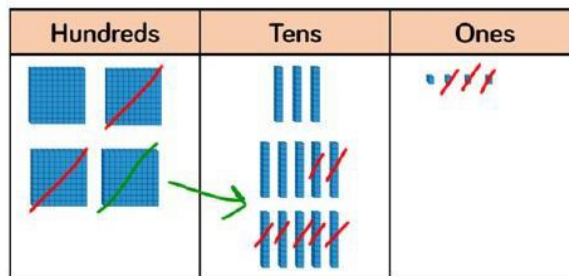
At this stage, children should be encouraged to partition their subtrahend into tens and ones.

At this stage, the use of counters or Base-10 are the most efficient manipulatives when subtracting numbers up to 3 digits.

Ensure that children write out their calculation alongside any concrete resources they have used. It is important to avoid terms such as 'borrowing' or 'takefrom' when exchanging.

Use Base 10 to model the calculations, and to draw attention to the exchange in subtraction

Concrete/ Pictorial



Abstract

$$\begin{array}{r}
 \text{HTO} \\
 \begin{array}{r}
 3 \quad 1 \\
 435 \\
 - 273 \\
 \hline
 262
 \end{array}
 \end{array}$$

$$435 - 273 = 262$$

Language Focus – “We minus the ones first. 5 ones minus 3 ones is equal to 2 ones.”
 “When we subtract the tens, we cannot subtract 7 tens from 3 tens. To complete the calculation, we need to exchange 1 hundred and regroup it into the tens column.”

Year 4

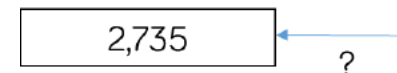
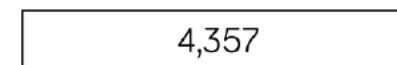
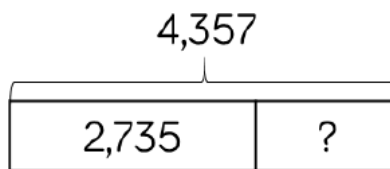
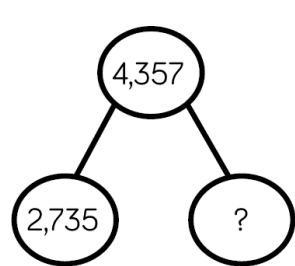
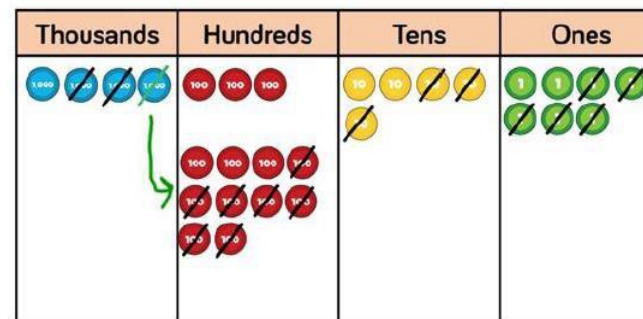
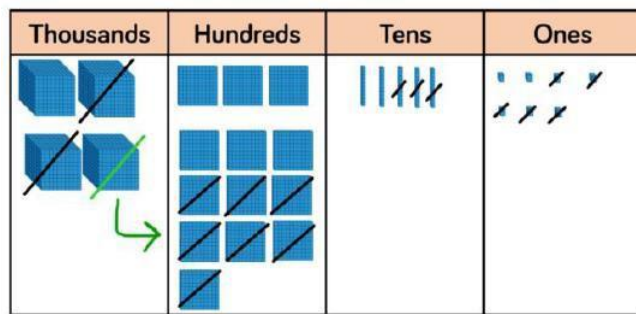
Concrete/ Pictorial

At this stage, children should be encouraged to identify how many exchanges they will need to do, before they start the calculation.

Children should be exposed to exchanging through zeros with explanation as to how to do this and why.

Ensure that children write out their calculation alongside any concrete resources they have used. Terminology is key here, it is important to avoid terms such as 'borrowing' or 'take from' when exchanging.

Use Base 10 to model the calculations, and to draw attention to the exchange in subtraction. Move away from using Base 10 when children are more confident.



Abstract

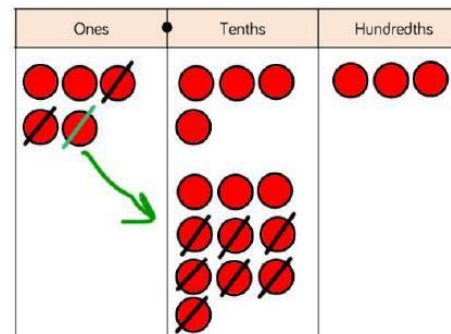
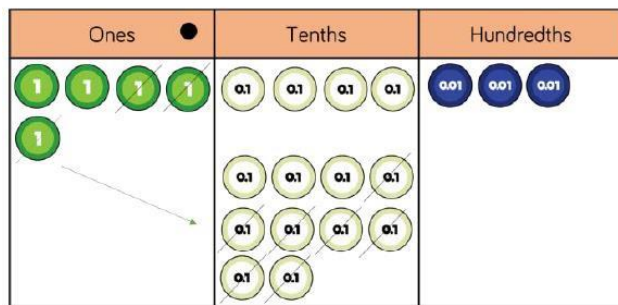
$$\begin{array}{r}
 \text{Th H T O} \\
 \begin{array}{r}
 3 \quad 1 \\
 4357 \\
 - 2735 \\
 \hline
 1622
 \end{array}
 \end{array}$$

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

Language Focus – “When we exchange through a zero, we exchange back to the zero first, before we move on.”
 “I know which calculations will need exchanging by looking at the which digit is bigger in each column.”

Year 5 - Decimals

Concrete/ Pictorial



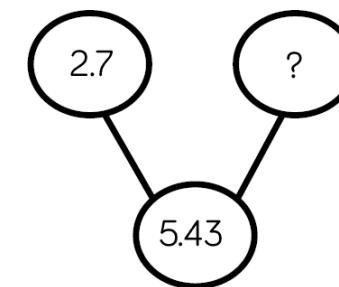
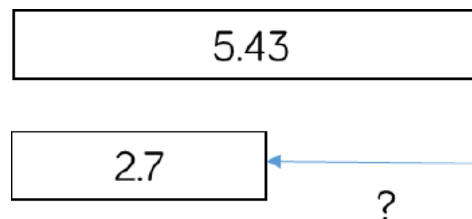
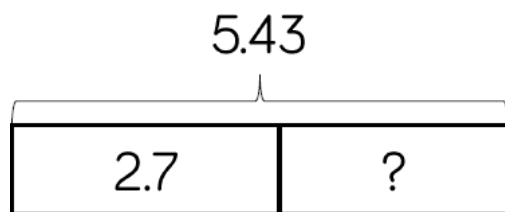
Children here can be encouraged to use either valued counters or plain counters to complete the calculation with up to 3 decimal places.

Bead strings can be used to show relationship between whole numbers and decimal numbers and be used to count on our back.

Children should be exposed to exchanging through zeros with explanation as to how to do this and why.

Children should use the formal method of subtraction alongside any use of concrete resources so they can see any links to the written column method.

Ensure children have had plenty of experience of subtracting decimals with a variety of decimal places. This includes putting this into context e.g. money and other measures.



Abstract

$$\begin{array}{r}
 0. \overset{1}{10} \overset{1}{100} \\
 4 \overset{1}{5} . 43 \\
 - 2.7 \\
 \hline
 2.73
 \end{array}$$

$5.43 - 2.7 = 2.73$

Language Focus – “Ten hundredths are equal to 1 tenth. 10 tenths are equal to 1 whole.”
 “If the subtrahend is smaller than the minuend, I must exchange.”
 “When subtracting a decimal number using column subtraction, The decimal point doesn’t move.”

Year 6

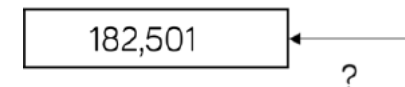
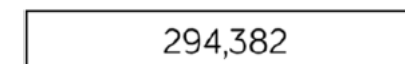
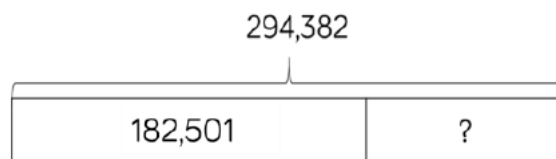
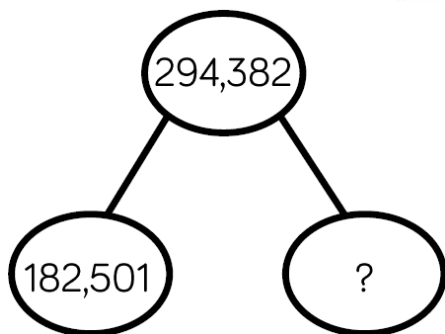
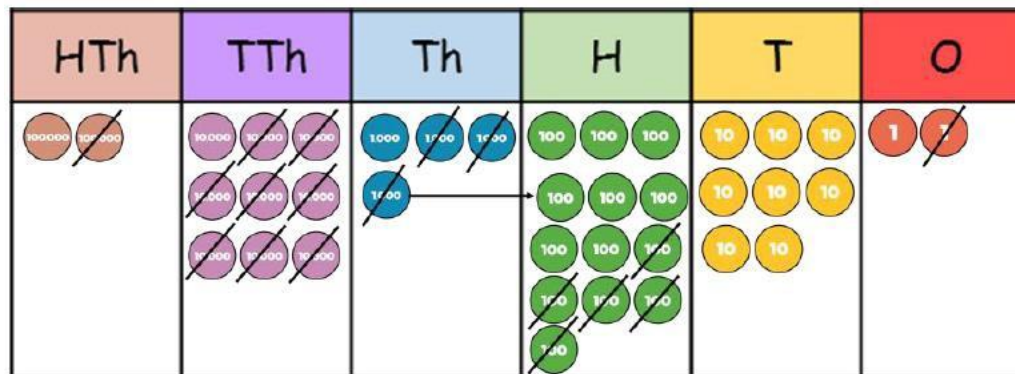
At this stage, children should use place value or plain counters as they are the most efficient resources for subtracting up to 7 digits.

Children should have plenty of exposure to missing number questions as well as a variety of vocabulary which suggests subtraction.

Children should be encouraged to use bar models alongside word questions.

Children should be encouraged to use the abstract methods to subtract larger numbers efficiently.

Concrete/ Pictorial



Abstract

	Hth	Tth	Th	H	T	O
	2	9	3	1 ₃	8	2
-	1	8	2	5	0	1
	1	1	1	8	8	1

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

Language Focus — “I can check my answer by completing an inverse operation.”
 “When completing missing number questions, I should remember any exchanged numbers.”

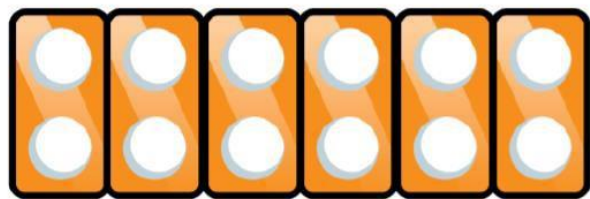


Spetisbury
CE Primary School

Multiplication

**Multiply, Multiplicand, Multiplier Factor,
Product, Times by, Lots of**

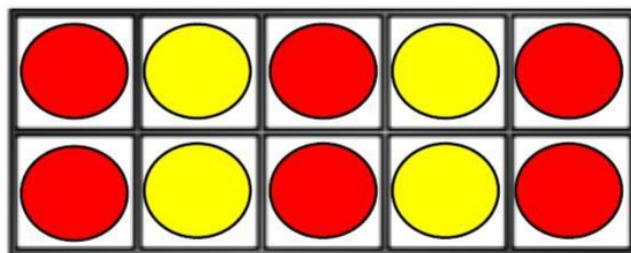
[- Return to Contents -](#)



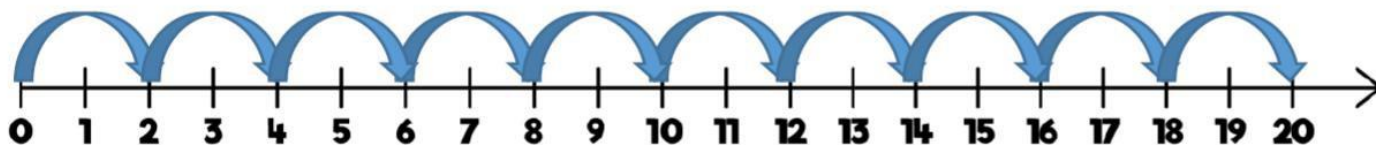
Year 2



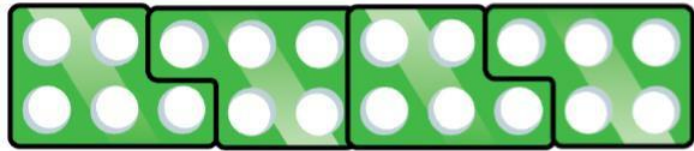
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



2 Times Tables



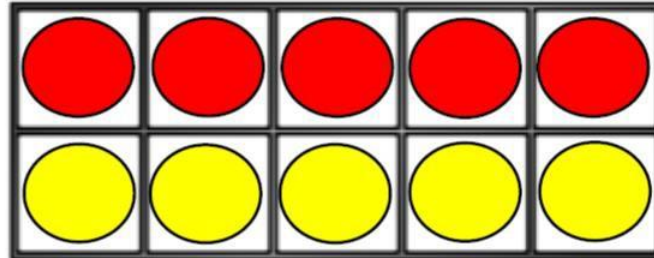
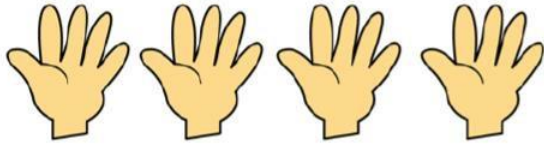
Encourage counting in multiples both forwards and backwards. The representations here can support this. Try to identify with the children the patterns and notice how all of the numbers are even. Children should be encouraged to make links between the 2-timestables and doubling.



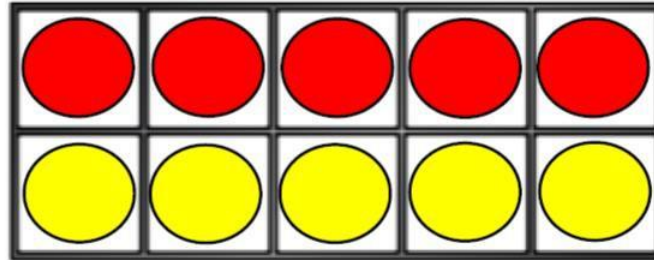
Year 2

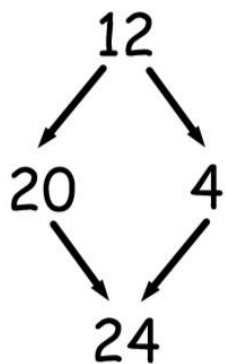
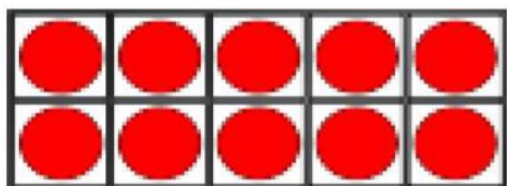
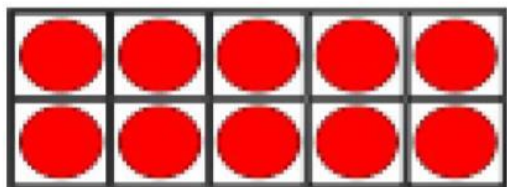
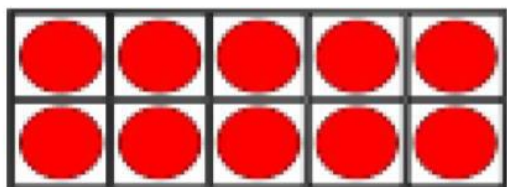
5 Times Tables

Use representations to count forward and backwards. Look at the patterns the 5 times tables make and notice the pattern of the numbers being odd, even, odd, even.



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





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

Year 2

10 Times Tables

Use representations, including money to look at the patterns in the ten times tables. Use Base-10 blocks to familiarise the children with counting in tens. Notice the pattern of the zero and that the answers increase by 1 ten each time.

Year 1/2 transition

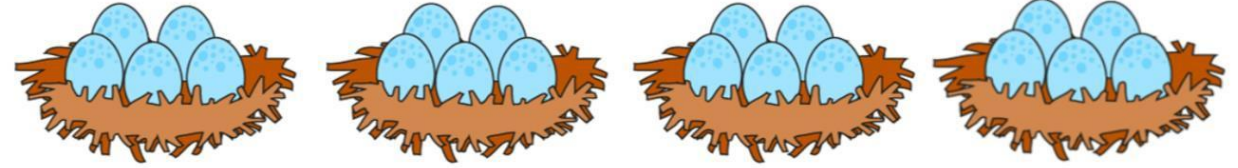
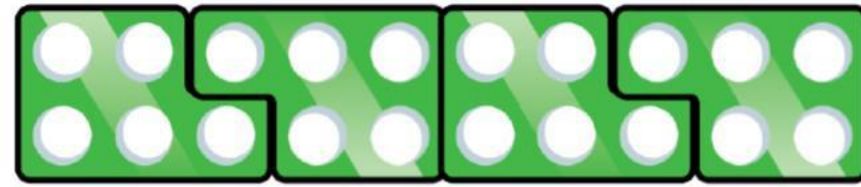
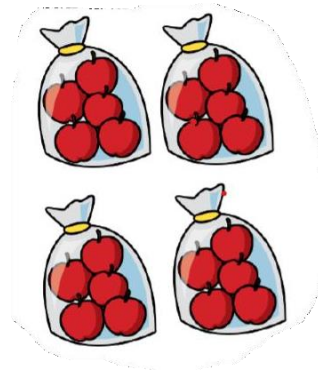
Repeated addition should be used to represent multiplication.

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

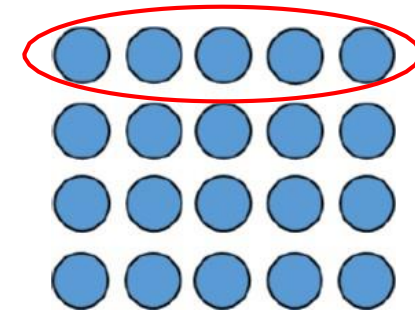
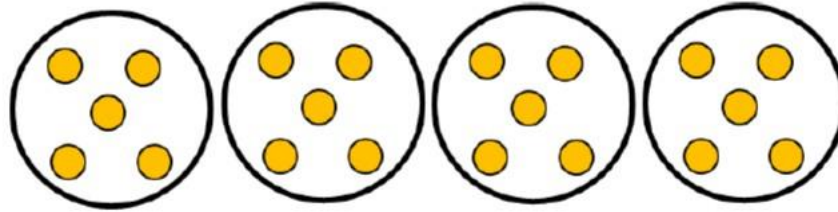
In Year 2, children are introduced to the multiplication symbol.

When using the 'x' sign, children should be encouraged to say "groupsof" or "multiplied by".

Concrete



Pictorial



Abstract



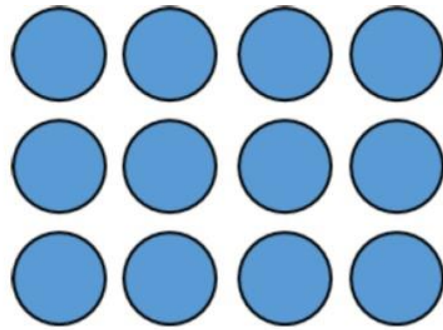
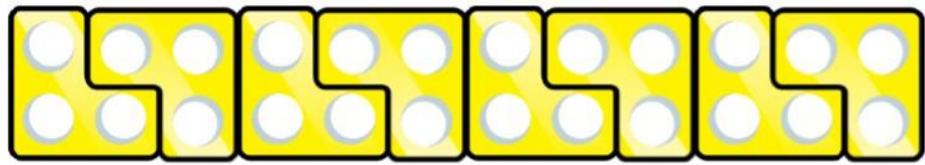
$$5 + 5 + 5 + 5 = 20$$

$$4 \times 5 = 20$$

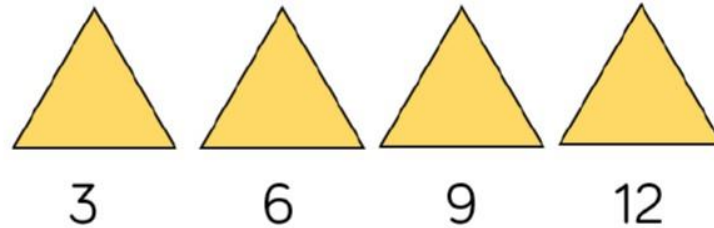
$$5 \times 4 = 20$$

Language Focus – “The 4 represents the groups, the 5 represents how many are in each group. The 20 represents the total number of eggs”

“We can represent repeated addition using multiplication.”



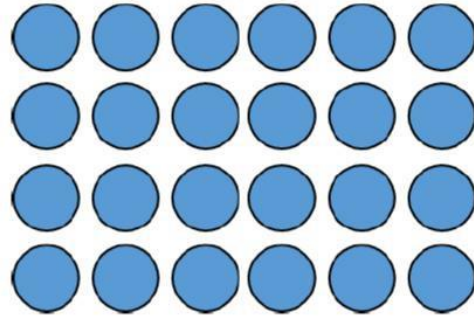
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



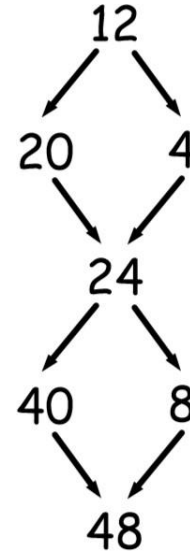
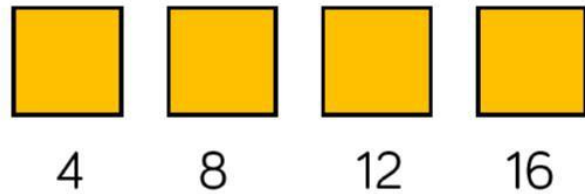
Year 3

3 Times Tables

Use representations to count forward and backwards. Look at the patterns the 3 times tables make and notice the pattern of the numbers being odd, even, odd, even. Highlight the pattern in a hundred square.



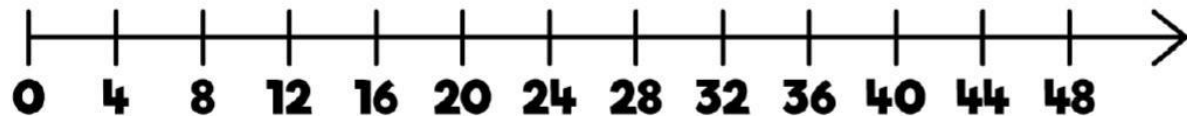
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



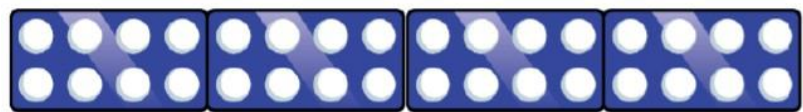
Year 3

4 Times Tables

4	8	12	16	20
24	28	32	36	40
44	48	52	56	60



Use representations to count forward and backwards. Make links between the 2 and 4 times tables. Encourage children to double and double again. Highlight that all multiples are even, use shapes to support.



8

16

24

32

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

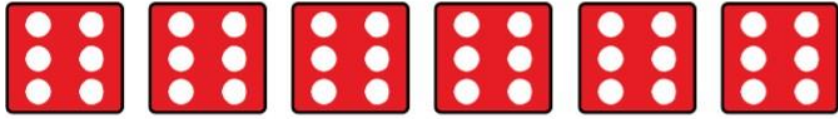
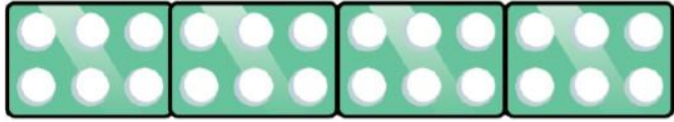
8	16	24	32	40
48	56	64	72	80

Year 3

8 Times Tables

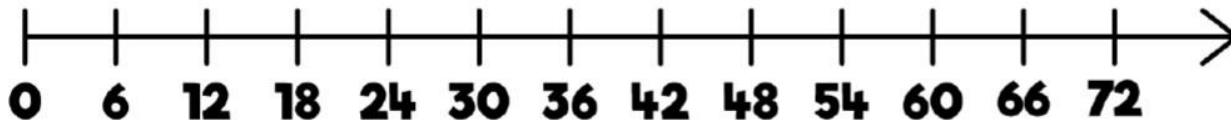


Use a hundred square or number line to help counting in multiples. Make links to the 4 timestables. Highlight that each multiple is double the fours. Highlight that all multiples are even and use shapes to support this.



6	12	18	24	30
36	42	48	54	60
66	72	78	84	90

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



Year 4

6 Times Tables

Encourage daily counting supported by a number line or hundred square. Make links to the 3 times tables. Highlight that each multiple is double the threes. Highlight that all multiples are even and use shapes to support this.



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

9	18	27	36	45
54	63	72	81	90

Year 4

9 Times Tables



Encourage daily counting forwards and backwards. Look for patterns using manipulatives. Highlight that the digits of all total 9. Notice the odd, even, odd even pattern within the multiples.

Year 4

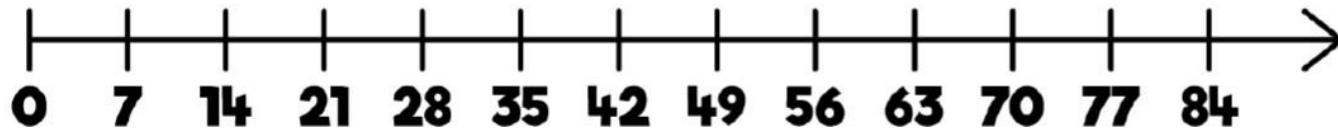
7 Times Tables

Encourage counting forwards and backwards using a number line or hundred square. Note that the 7 times table can often be tricky because of the lack of pattern in the numbers. Highlight that many of these facts are already known due to commutativity.

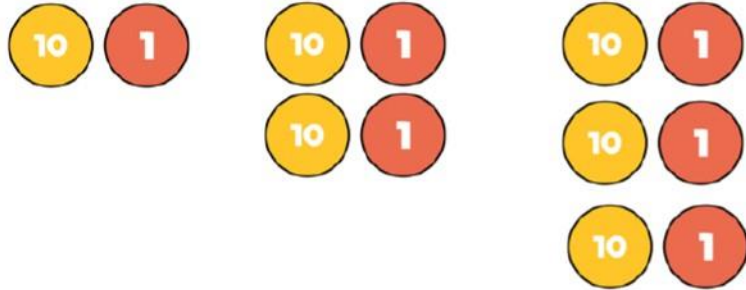


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

7	14	21	28	35
42	49	56	63	70



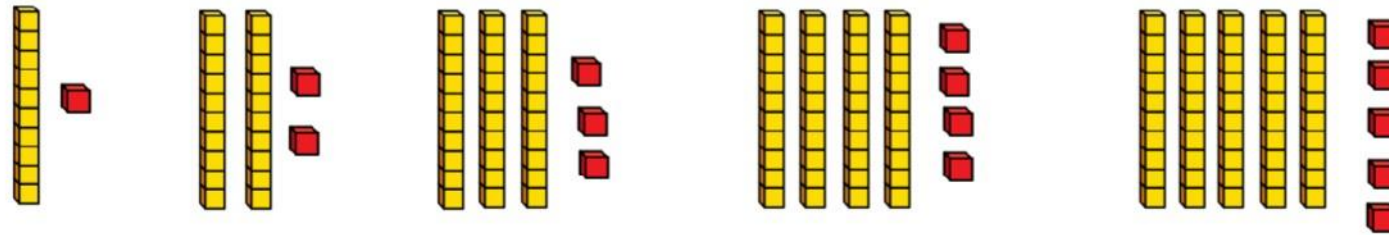
11	22	33	44	55	66
77	88	99	110	121	132



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

Year 4

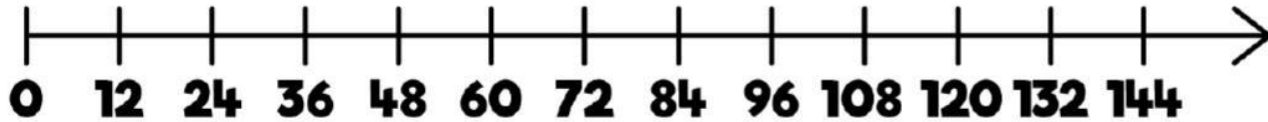
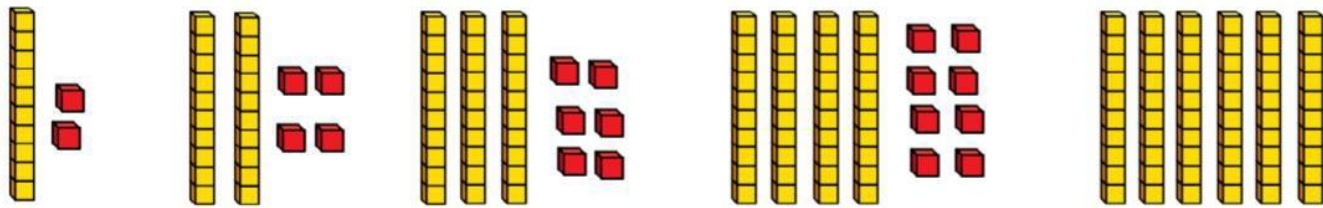
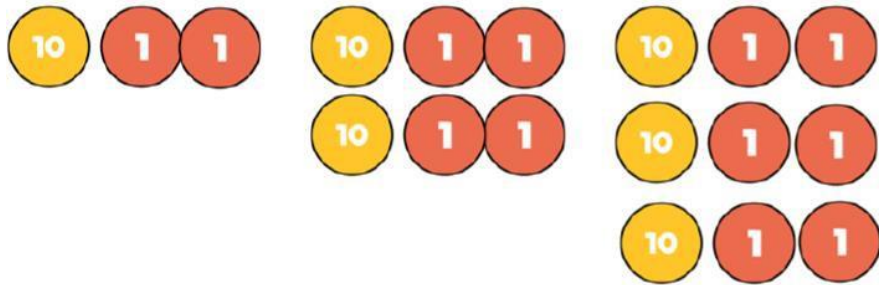
11 Times Tables



Encourage counting forwards and backwards using a number line or hundred square. Look for patterns in the numbers using manipulatives. Consider the patterns after crossing 100. Note that to 'find the next multiple' we can add ten, then add one.

12	24	36	48	60
72	84	96	108	120
132	144			

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



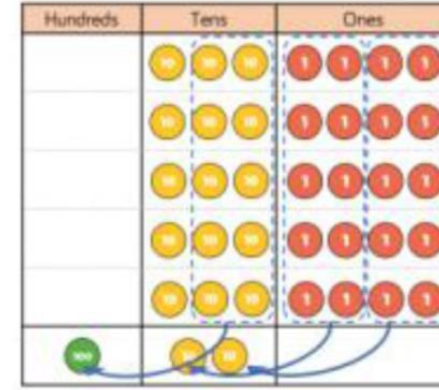
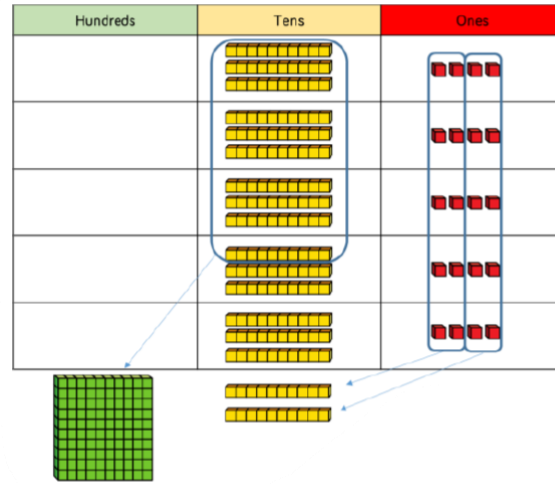
Year 4

12 Times Tables

Encourage counting forwards and backwards using a number line or hundred square. Make links to the 6-times table and note that each multiple is double. Note that to 'find the next multiple' we can add ten, then add two.

Year 3/4 multiplying 2-digit numbers by 1-digit numbers

Concrete/Pictorial



Teachers should look at expanded column multiplication before moving on to short multiplication.

Place value columns should be identified in each question and columns should be aligned to make the final addition more accurate.

Place value counters should be used to support the understanding of the method rather than supporting the multiplication. Children apply knowledge of the 2,5,10,3,4 & 8 times tables.

Abstract

Step 1 - Expanded

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

Step 2 - Short

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

$$34 \times 5 = 170$$

Language Focus – “When multiplying in using expanded column method, I need to make sure I record each calculation I complete.”

“When I have finished multiplying, I can check that I have multiplied all numbers by looking that the recorded calculations.”

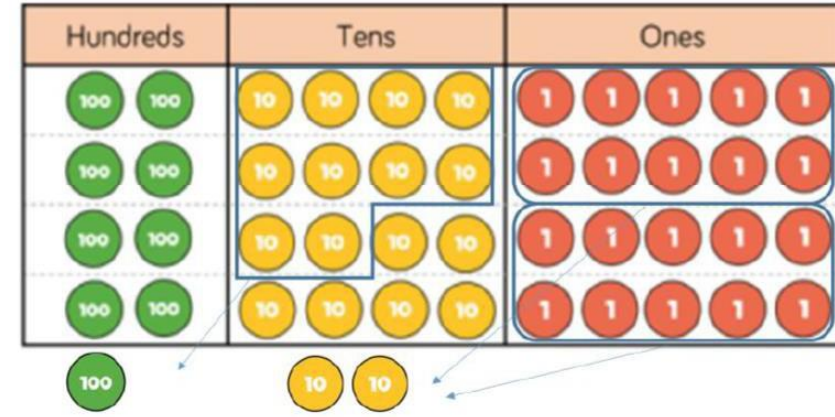
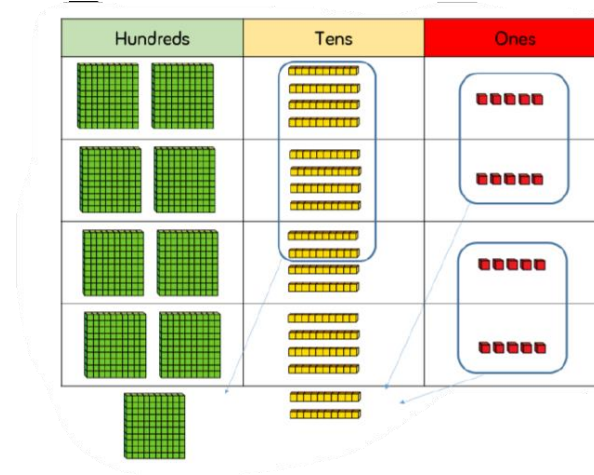
Year 3/4 multiplying 3-digit numbers by 1-digit numbers

At this stage, children should use the manipulatives alongside the formal method. Counters and Base-10 blocks are the most efficient methods of showing this calculation. With larger numbers, children should begin moving away from manipulatives.

Children should be encouraged to move away from the expanded method at this stage. They can however refer to it if needed. Limit the number of exchanges in each question.

Children apply knowledge of the 2,5,10,3,4 & 8 times tables.

Concrete/Pictorial



Abstract

	H	T	O
	2	4	5
x			4
<hr/>			
	9	8	0
	1	2	

$$245 \times 4 = 980$$

Language Focus – “5 x 4 = 20” “5 times 4 ones = 20 ones”

“20 ones = 2 tens and 0 ones”

“2 is recorded below the tens column, 0 is recorded in the ones column”

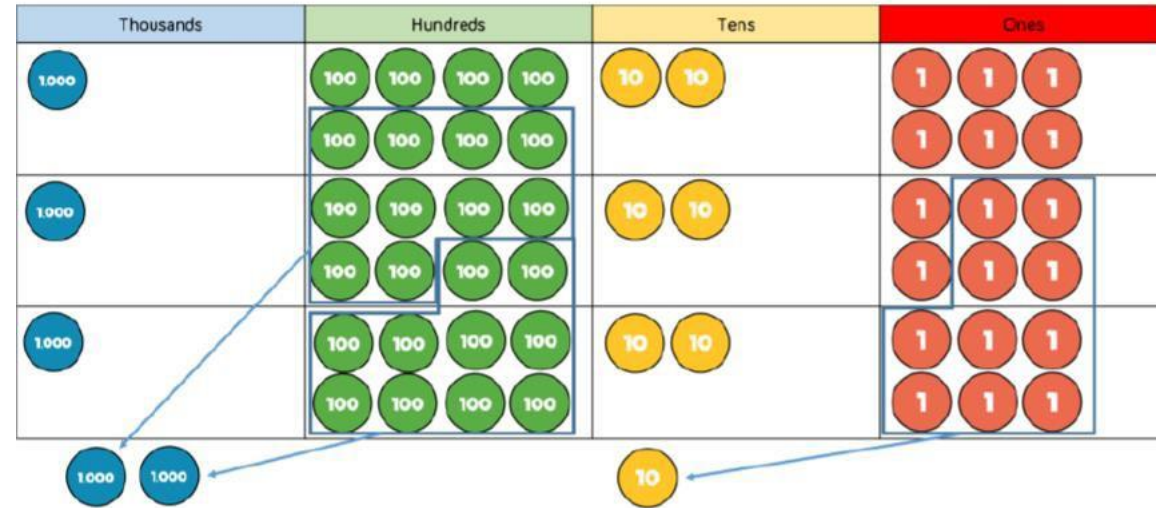
Year 3-5 multiplying up to 4-digit numbers by 1-digit numbers

Concrete/Pictorial

At this stage, children should use the manipulatives alongside the formal method. Counters and Base-10 blocks are the most efficient methods of showing this calculation. However, with larger numbers, children should begin moving away from manipulatives.

Children should also be encouraged to move away from the expanded method. They can however refer to it if needed.

If children are struggling with their times tables, encourage the use of times table grids so children can focus on the written method.



Abstract

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

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

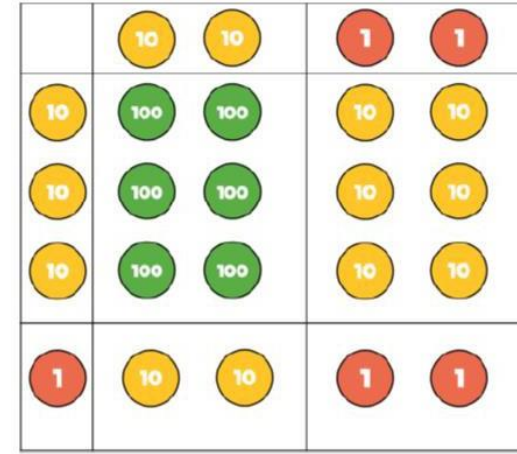
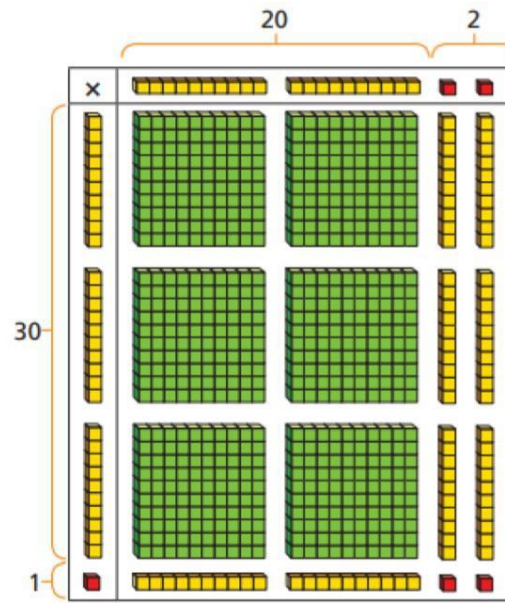
Language Focus – “ $6 \times 3 = 18$ ” “6 times 3 ones = 18 ones”

“18 ones = 1 ten and 8 ones”

“1 is recorded below the tens column, 8 is recorded in the ones column”

Year 5 multiplying 2-digit numbers by 2-digit numbers

Concrete/Pictorial



Using the area model (pictorial grid method) at this stage will help children understand the size of the numbers they are using.

This also links to finding the area of rectangles by finding to 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 method of multiplication.

If children are struggling with their times tables, encourage the use of times table grids so children can focus on the written method.

Abstract

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

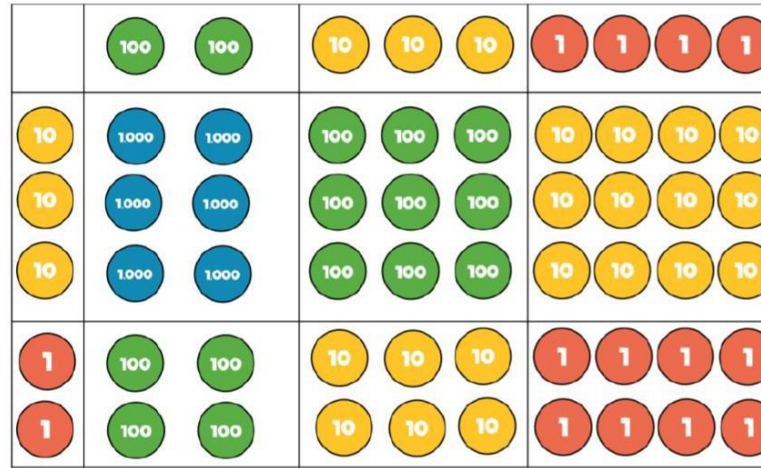
x	20	2
30	600	60
1	20	2

$$22 \times 31 = 682$$

Language Focus – “I can partition my tens and ones before I multiply them together.
 “I can multiply tens numbers easily by making them ten times smaller first, and then making my answer ten times bigger.”

Year 5/6 multiplying 3-digit numbers by 2-digit numbers

Concrete/Pictorial



Continued...

Encourage children to move to the formal written method (Long Multiplication) when they are able to see the links with grid method.

Remind the children that when multiplying by the tens number, it is easier to make the entire answer 10 times bigger, before multiplying.

If children are struggling with their times tables, encourage the use of times table grids so children can focus on the written method.

Abstract

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

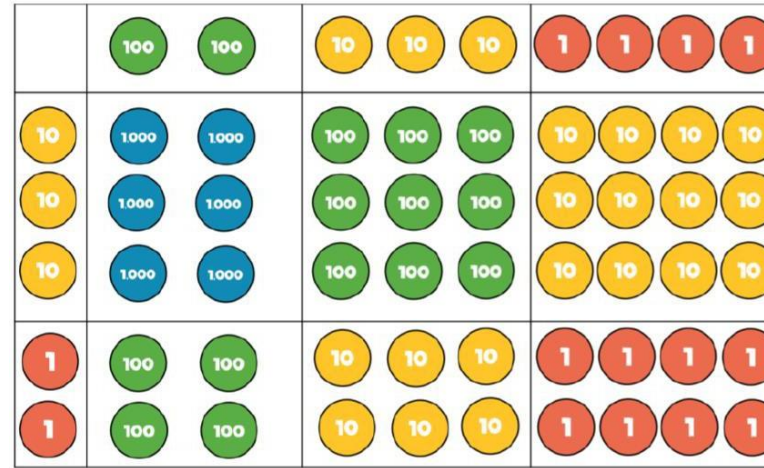
	Th	H	T	O
		2	3	4
×			3	2
		4	6	8
1 ⁷	1 ⁰	2	0	
7	4	8	8	

Language Focus – “When using the long multiplication method, I know that my exchanged numbers move below the next column.”

“When I begin multiplying the tens column for the multiplier, I can make my answer ten times bigger which is why there is a zero in the ones column.”

Year 5/6 multiplying 3-digit numbers by 2-digit numbers

Concrete/Pictorial



Continued...

Encourage children to move to the formal written method (Long Multiplication) when they are able to see the links with grid method.

If children are struggling with their times tables, encourage the use of times table grids so children can focus on the written method.

Abstract

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

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

Language Focus – “5 x 4 = 20”

“5 times 4 ones = 20 ones”

“20 ones = 2 tens and 0 ones”

“2 is recorded below the tens column, 0 is recorded in the ones column”

Year 6 multiplying up to 4-digit numbers by 2-digit number

Continued...

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

If children are struggling with their times tables, encourage the use of times table grids so children can focus on the written method.

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

If helpful, children can be taught to lightly cross out exchanged numbers to avoid confusion once finished (see example)

Abstract

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



Spetisbury
CE Primary School

Division

**Divide, Divisor, Quotient, Dividend,
Groups of, Lots of**

[- Return to Contents -](#)

Year 1/2 transition - Sharing

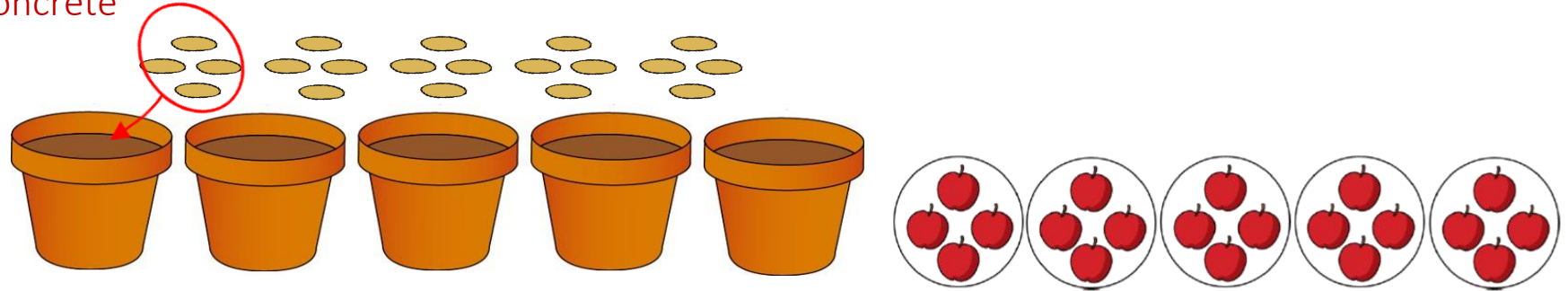
Children are to solve problems by sharing into equal groups.

In Year 1, children can begin by using concrete and pictorial representations. Children are not expected to record division formally.

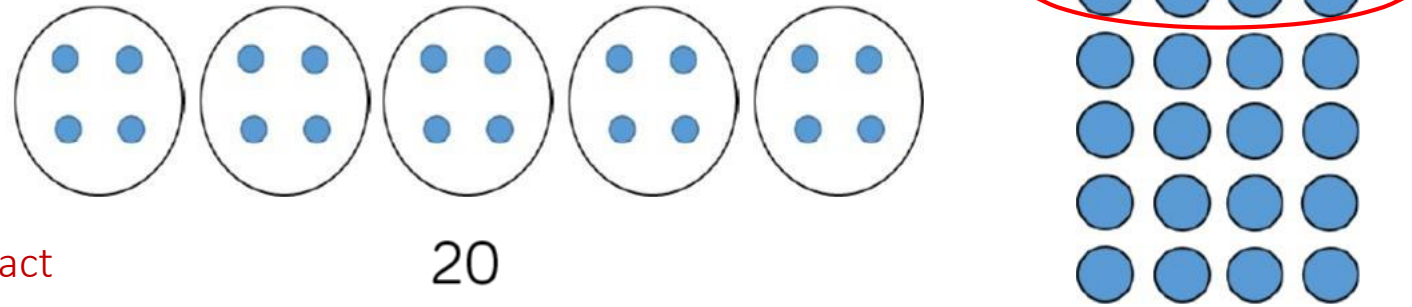
In Year 2, children are introduced to the division symbol and also the use of bars alongside pictorial representations.

When using the '÷' sign, children should be encouraged to say "divided by".

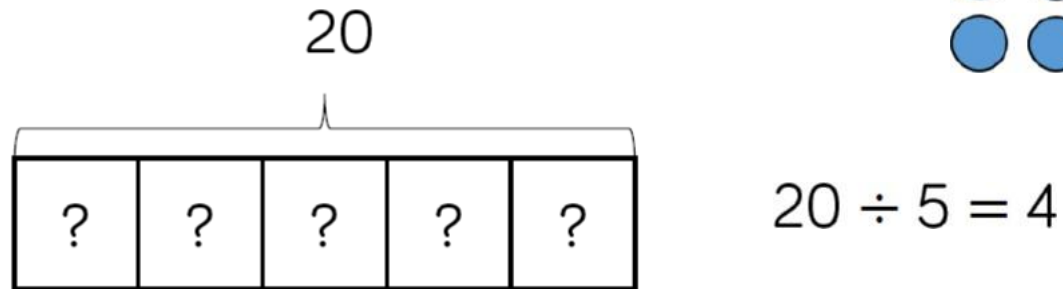
Concrete



Pictorial



Abstract



Language Focus – “The 20 represents the number of seeds, If I share them into 5 plant pots, I have 4 seeds in each pot.”

“I can share 20 seeds equally into 5 groups. Each group has 4 seeds in.”

Year 1/2 transition - Grouping

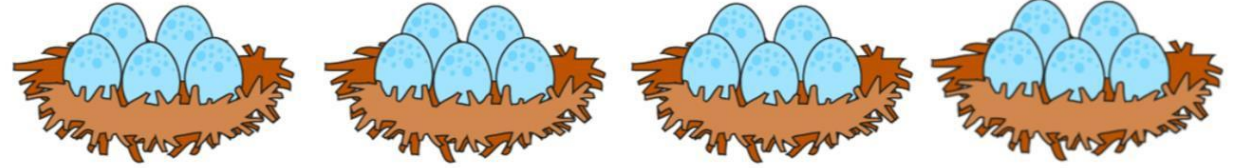
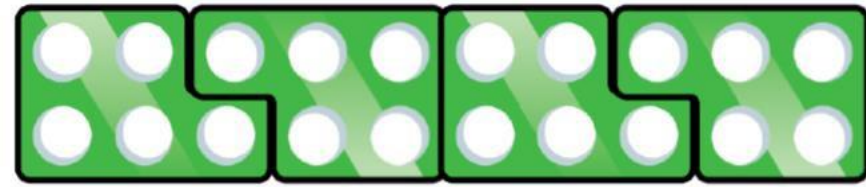
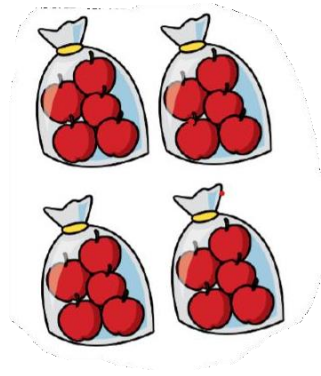
Children to solve problems by counting the groups. This encourages children to link to repeated subtraction.

Children should be encouraged to make connections to multiplication.

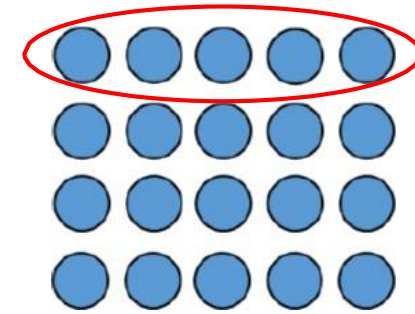
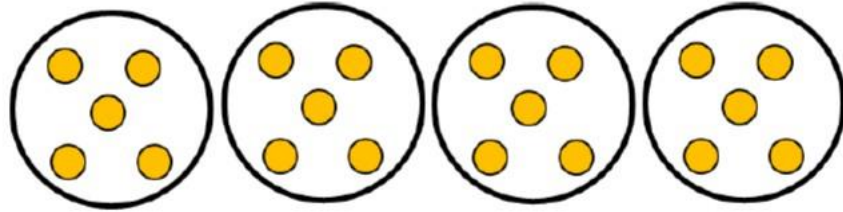
Children should use representations of fixed groups (Lego, Multilink etc) to help to embed the link between multiplication and division.

When using the '÷' sign, children should be encouraged to say "divided by".

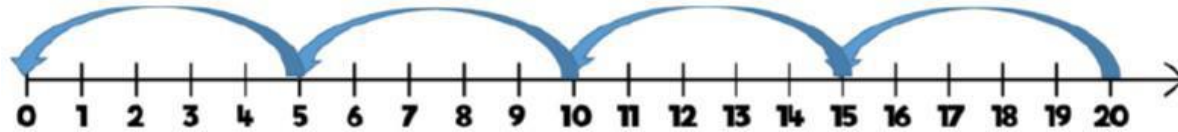
Concrete



Pictorial



Abstract



$$20 \div 5 = 4$$

Language Focus – “The 20 represents the number of eggs, the 5 represents the number of eggs in each group. The 4 represents the number of groups.”

“We can represent repeated subtraction using division.”

Year 2/3 transition –
dividing 2-digits by 1-digit

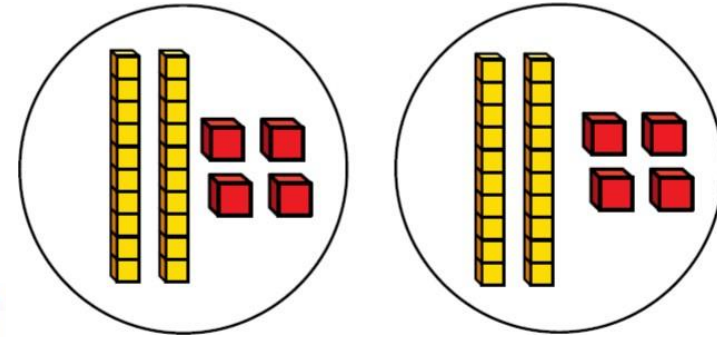
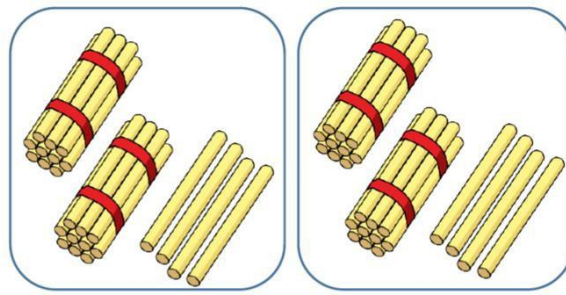
When dividing larger numbers, children should look to partition numbers into tens and ones using manipulatives.

Straws, Base-10 & counters can be used to share numbers into equal groups.

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

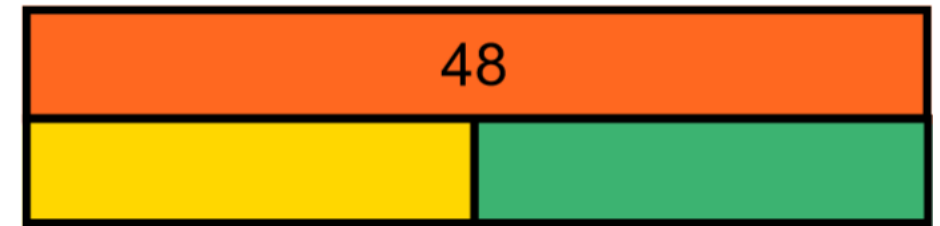
When using the '÷' sign, children should be encouraged to say "divided by".

Concrete

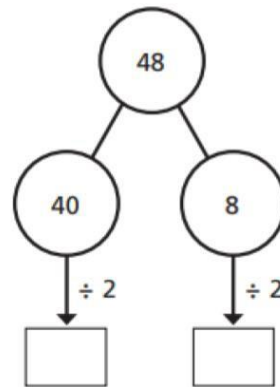


Pictorial

Tens	Ones



Abstract



$$48 \div 2 = 24$$

Language Focus – “When we are skip counting, we should count in multiples of 2.”

“When dividing by two, I am halving a number.”

“If I have a larger number, I can partition the number, divide it and then regroup it.”

Year 3/4 transition – dividing 2-digits by 1-digit with exchange

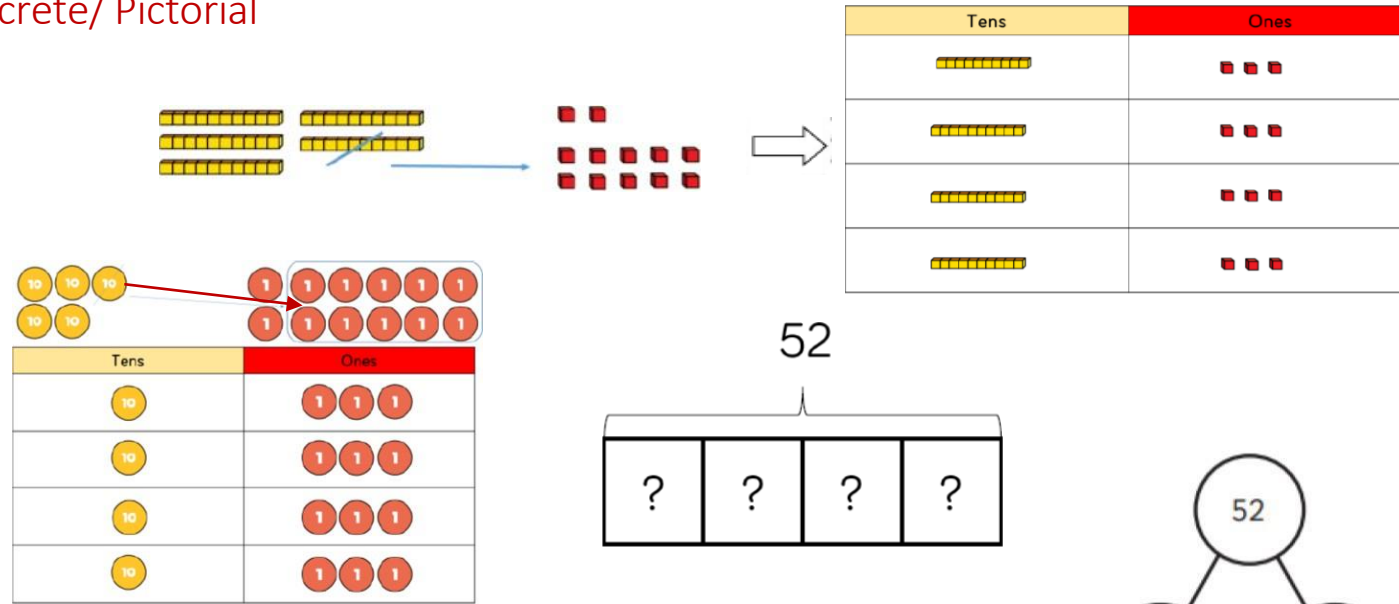
When dividing numbers that involve an exchange, children should use Base-10 or counters to show this exchange for 10 ones.

Children should always start the exchange outside a place value grid before then sharing the tens and ones equally between the rows.

Flexible partitioning in a part whole model supports this method. When dividing by 4, children can also be encouraged to half and then half again.

Bars can be used to illustrate numbers being 'split' into parts and will link with fractions.

Concrete/ Pictorial



Abstract

$$52 \div 4 = 13$$

- Language Focus* – “When sharing 5 tens into 4 groups, I need to exchange 1 ten for 10 ones.”
 “When partitioning by number, I should look to partition in ways which support the divisor.”
 “When I have finished dividing, my answer is called the quotient.”

Year 3/4 transition –
dividing 2-digits by 1-digit
sharing with remainders

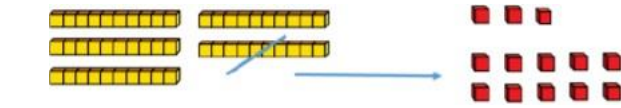
When dividing numbers that involve an exchange, children should use Base-10 or counters to show this exchange for 10 ones.

Children should always start the exchange outside a place value grid before then sharing the tens and ones equally between the rows.

Remainders will be highlighted and can be left outside the grid once the equal groups have been made.

Flexible partitioning in a part whole model supports this method. When dividing by 4, children can also be encouraged to half and then half again.

Concrete/ Pictorial



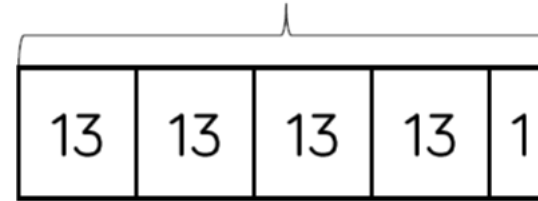
Tens	Ones
10	1 1 1
10	1 1 1
10	1 1 1
10	1 1 1
10	1 1 1

1



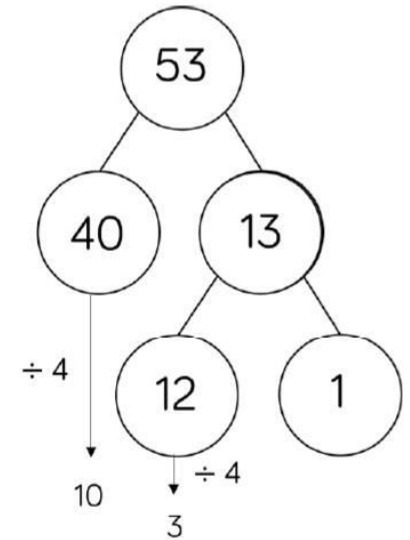
Tens	Ones
10	1 1 1
10	1 1 1
10	1 1 1
10	1 1 1
10	1 1 1

53



Abstract

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



Language Focus – “When sharing 5 tens into 4 groups, I need to exchange 1 ten for 10 ones.”
 “When partitioning by number, I should look to partition in ways which support the divisor.”
 “When I have finished dividing, my answer is called the quotient.”

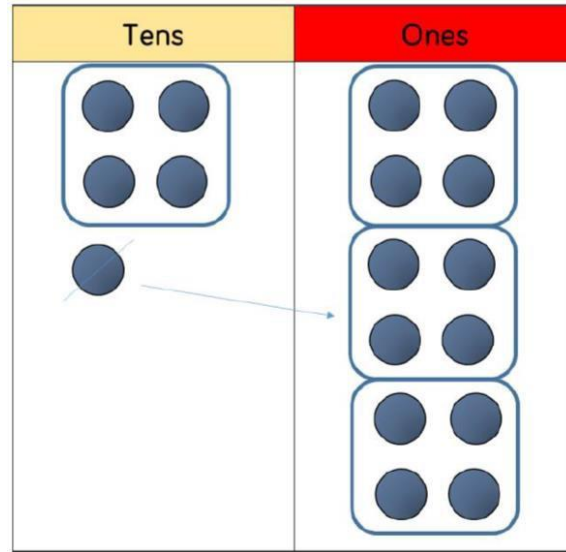
Year 4/5 transition –
dividing 2-digits by 1-digit
grouping

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

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

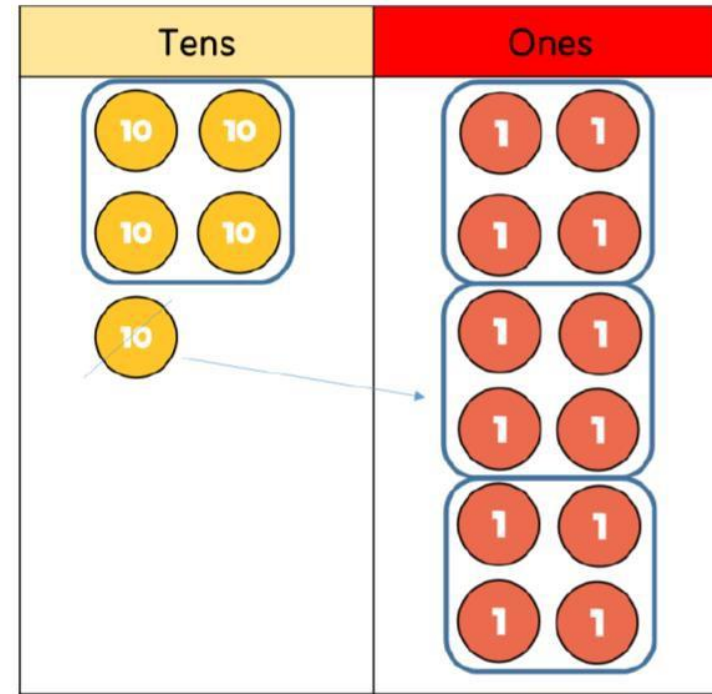
Remainders can be used and identified here and be left ungrouped and outside of the rows. In the short division method, a remainder should be recorded as ‘r’.

Concrete/ Pictorial



Abstract

$$52 \div 4 = 13$$



Taught alongside
one another

Language Focus – “How many groups of 4 tens can I make from 5 tens?”

“After I have made my groups, my remaining tens counter can be exchanged for 10 ones.”

“When I have finished dividing, any counters that cannot be grouped are called remainders.”

Year 4/5 transition— dividing 3-digits by 1-digit

Children can continue to use place value counters to share 3-digit numbers into equal groups.

Children should once again start with equipment outside a place value grid before sharing equally between the rows.

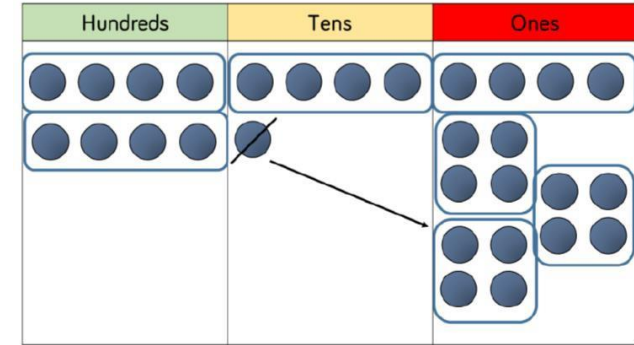
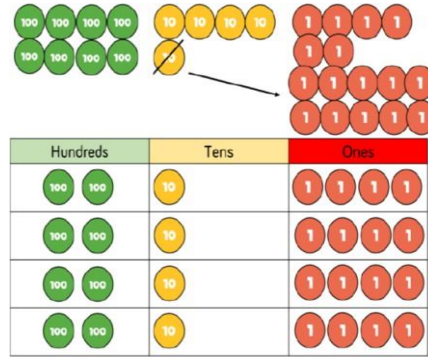
Children can also draw their counters and group them through a more pictorial method.

Bars can be used to illustrate numbers being 'split' into parts and will link with fractions.

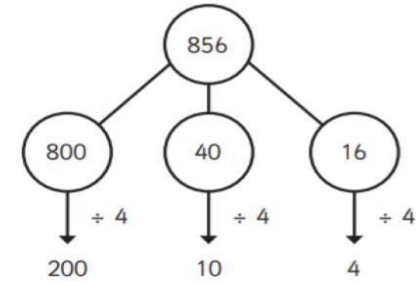
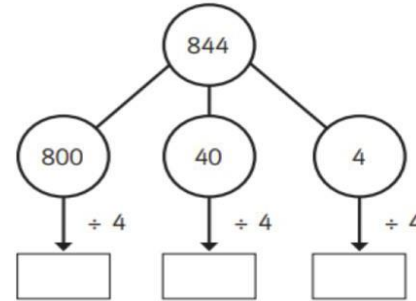
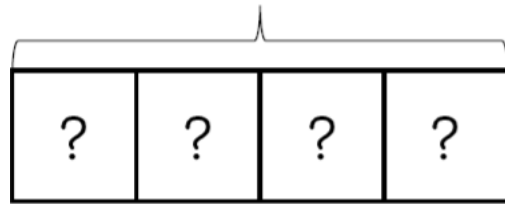
Remainders can be used and identified here and be left ungrouped and outside of the rows. In the short division method, a remainder should be recorded as 'r'.

Concrete/ Pictorial

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



844



Abstract

$$844 \div 4 = 211$$

$$856 \div 4 = 214$$

$$\begin{array}{r} 211 \\ 4 \overline{) 844} \end{array} \qquad \begin{array}{r} 214 \\ 4 \overline{) 856} \end{array}$$

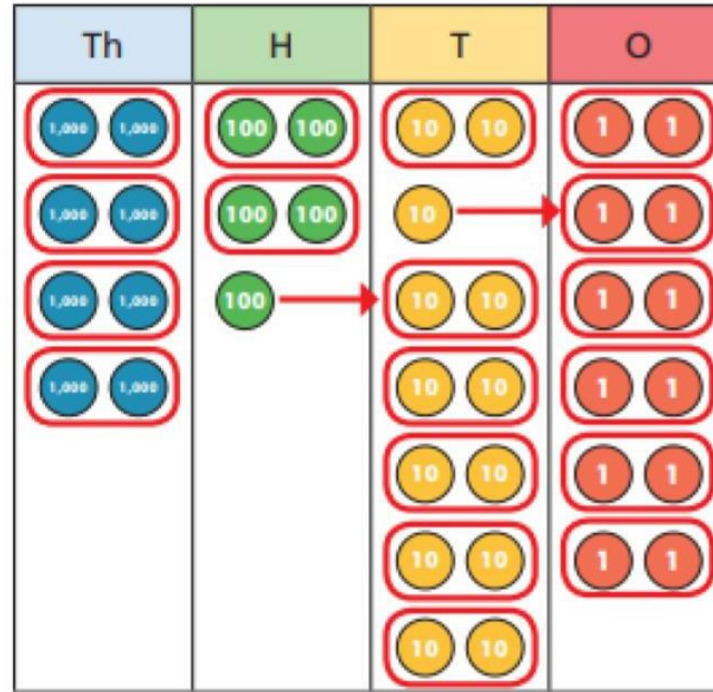
Language Focus — “I am sharing 844 equally into 4 groups.”

“I can exchange a ten for 10 ones.”

“When using the divide sign, I can say ‘844 shared into 4 groups’.”

Year 4/5 transition—
dividing 3-digits by 1-digit

Concrete/ Pictorial



Continued...

Short division method should be taught alongside the use of counters and place value grid.

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

Remainders can be used and identified here and be left ungrouped and outside of the rows. In the short division method, a remainder should be recorded as 'r'.

Abstract

	4	2	6	6
2	8	5	13	12

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

Year 6 – Short division – multi-digits

Concrete/ Pictorial

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

15	30	45	60	75	90	105	120	135	150
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When children begin dividing up to 4 digits, written methods become the most accurate method as concrete and pictorial become less effective.

Remainders can be used and identified here and be left ungrouped and outside of the rows. In the short division method, a remainder should be recorded as '*r*'.

Abstract

$$432 \div 12 = 36$$

		0	3	6
	12	4	⁴ 3	⁷ 2

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

		0	4	8	9
	15	7	⁷ 3	¹³ 3	¹³ 5

Language Focus – “If I know 1 x 15, I know 2 x 15. If I know 2 x 15, I know 4 x 15. If I know 4 x 15, I know 8 x 15. etc.”

“How many groups of 15 can I make without going past.....?”

“I can subtract ____ groups of 15 from ____”

Year 6 – Long Division– multi-digits

Concrete/ Pictorial

15	30	45	60	75	90	105	120	135	150
----	----	----	----	----	----	-----	-----	-----	-----

When using long multiplication, children should be encouraged to use the expanded method (left) or the ‘line’ method (right)

Children will also solve problems where the remainder is rounded and when you continue into decimal places. These problems can continue into 2 or 3 decimal places.

Abstract

	0	4	8	9	
15	7	3	3	5	
-	6	0	0	0	(x400)
	1	3	3	5	
-	1	2	0	0	(x80)
		1	3	5	
-		1	3	5	(x9)
				0	

$1 \times 15 = 15$

$2 \times 15 = 30$

$3 \times 15 = 45$

$4 \times 15 = 60$

$5 \times 15 = 75$

$10 \times 15 = 150$

		Th	H	T	O
		0	4	8	9
15	7	3	3	5	
-	6	0			
	1	3	3		
-	1	2	0		
		1	3	5	
-		1	3	5	
				0	

Language Focus – “Instead of finishing with a remainder, I can continue into the tenths and hundredths column by inserting a zero in those columns.”
 “By inserting zero here, I can continue with the division without changing the value of the original number.”