

# Calculation Policy

## 2025-26

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<b>Approved By</b>	Chris Lambert and Sarah Crampton
<b>Policy Category</b> (Please indicate in bold)	1 - Academy to implement without amendment 2 – Academy specific appendices 3 – Academy personalisation required (highlighted)

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## Version Control

<i>Version</i>	<i>Revision Date</i>	<i>Revised by</i>	<i>Section Revised</i>
V2	27.09.23	SC	None all up to date
V3	29.4.26	TOC	New branding template

## Introduction

This policy has been largely adapted from the White Rose Maths Hub Calculation Policy with further material added. It is a working document and will be revised and amended as necessary. This is a product of collaboration between all Exceed Maths Leaders and supports, unifies enhances the approaches already in place.

The purpose of a shared approach is to support teacher understanding and pedagogy; ensure there is consistency to support moderation and year group networks and to support more collaborative training/coaching opportunities within Mathematics.

Documents to further support the Teaching and Learning of Maths created/distributed by colleagues within the Maths Network are:

1. Diagnostic Assessment Document
2. Mental Maths & Arithmetic Progression Document
3. Teacher Prompt Document
4. Sentence Stems
5. Knowledge Organisers

## Manipulatives

Throughout the policy examples of concrete and pictorial examples are shared. These are not an exhaustive list. Through using the accompanying Teacher Prompt Document individual teachers will be able to consider precisely which manipulatives and models need to be used with each particular group of pupils. Manipulatives and pictorial models should be used in every year group for all abilities when introducing a new concept to ensure children can underpin their knowledge securely.

Everyday objects are also invaluable to support children's learning to keep interest and help them understand that Maths is everywhere for example:

1. Pebbles
2. Marbles
3. Milk tops
4. Bun tins
5. Paper straws



6. Cotton Balls
7. Playdough
8. Lollipop Sticks
9. Dried Beans
10. Toy Cars
11. Fruit
12. Lego

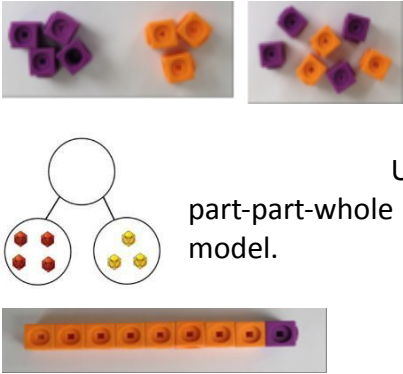
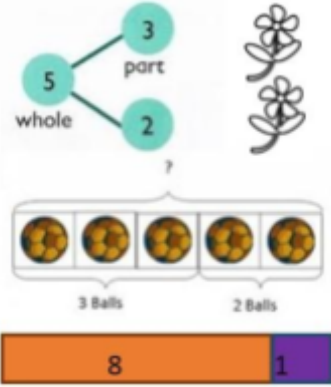



## **Bar Modelling**

The bar model is used to help children to 'see' mathematical structure. It is not a method for solving problems, but a way of revealing the mathematical structure within a problem and gaining insight and clarity to help solve it. It supports the transformation of real-life problems into a mathematical form and can bridge the gap between concrete mathematical experiences and abstract representations. It should be preceded by and used in conjunction with a variety of representations, both concrete and pictorial, all of which contribute to children's developing number sense. It can be used to represent problems involving the four operations, ratio and proportion. It is also useful for representing unknowns in a problem and as such can be a precursor to more symbolic algebra.

It is helpful to introduce children to the bar model as part of a sequence of learning so they can connect their understanding of the real world to this mathematical representation. Bar modelling should be used when introducing problem solving physical or abstract to pupils to see the Maths from Year 1 Year 6. These can be introduced alongside practical resources and/or acting out the problem. The problem and use of bar models can then be built upon year on year and become more complex through to Year 6.

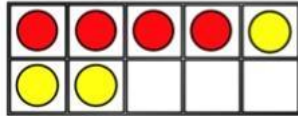


Addition Year 1

Objective & Strategy	Concrete	Pictorial	Abstract
<p><b>Combining two parts to make a whole: part-part-whole model</b></p>	 <p>Use cubes to add two numbers together as a group or in a bar.</p> <p>Use part-part-whole model.</p>	 <p>Use pictures to add two numbers together as a group or in a bar.</p>	 $4 + 3 = 7$ <p>Four is a part, 3 is a part and the whole is seven.</p> $10 = 6 + 4$ <p>Use the part-part-whole diagram as shown above to move into the abstract.</p>
<p><b>Starting at the bigger number and counting on</b></p>	 <p>Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.</p>	 <p>Start at the larger number on the number line and count on in ones or in one jump to find the answer.</p>	$5 + 12 = 17$ <p>Place the larger number in your head and count on the smaller number to find your answer.</p>

**Regrouping to make 10.**

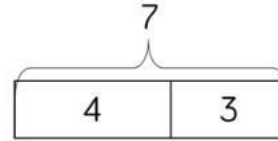
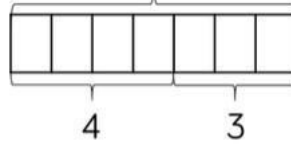
*This is an essential skill for column addition later*



$$6 + 5 = 11$$



Start with the bigger number and use the smaller number to make 10.  
Use ten frames.



Use pictures of a number line. Regroup or partition the smaller number using the part-part-whole model to make 10.

$$7 + 4 = 11$$

If I am seven, how many more do I need to make 10. How many more do I add on now?

$$6 + \square = 11$$

$$6 + 5 = 5 + \square$$

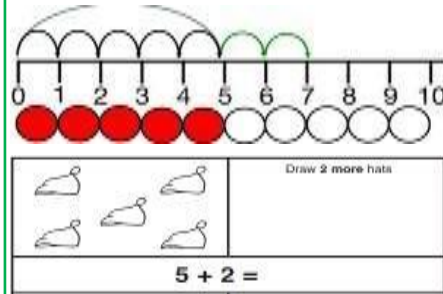
$$6 + 5 = \square + 4$$

Children to develop an understanding of equality.

**Represent and use number bonds and related subtraction facts within 20.**



2 more than 5.



Emphasis should be on language.


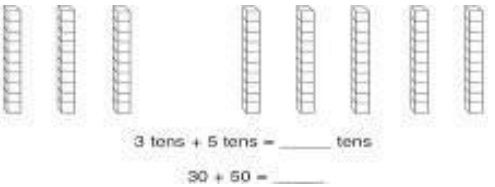
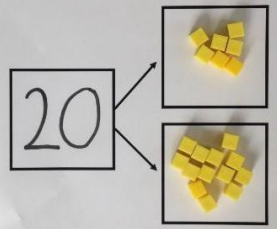
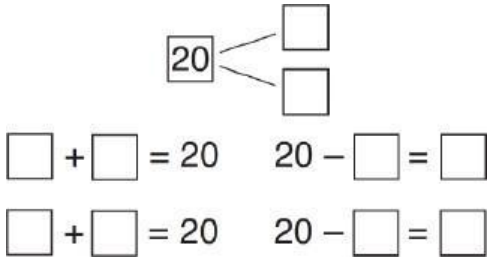
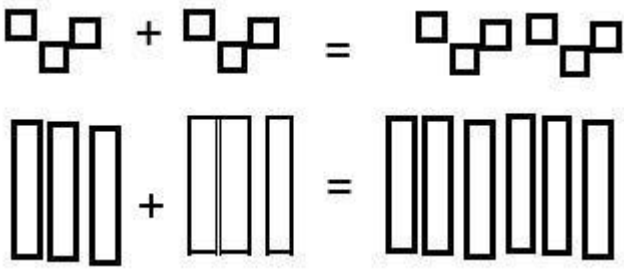
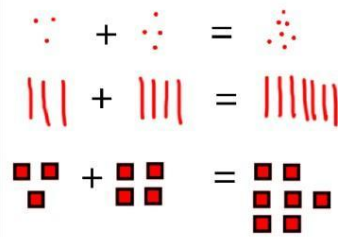
“1 more than 5 is equal to 6.”

“2 more than 5 is 7.”

“8 is 3 more than 5.”



Addition Year 2

Objective & Strategy	Concrete	Pictorial	Abstract
<p><b>Adding multiples of ten.</b></p>	<p>50 30 20</p>  <p>= +</p> <p>Model using dienes and bead strings.</p>	 <p>3 tens + 5 tens = _____ tens 30 + 50 = _____</p> <p>Use representations for base ten.</p>	<p><math>20 + 30 = 50</math> <math>70 = 50 + 20</math> <math>40 + \square = 60</math></p>
<p><b>Use known number facts</b></p>	 <p>Children explore ways of making numbers within 20.</p>	 <p><math>\square + \square = 20</math>    <math>20 - \square = \square</math> <math>\square + \square = 20</math>    <math>20 - \square = \square</math></p>	<p><math>\square + 1 = 16</math>    <math>16 - 1 = \square</math> <math>1 + \square = 16</math>    <math>16 - \square = 1</math></p>
<p><b>Using known facts</b></p>		 <p>Children draw representations of H, T and O</p>	<p><math>3 + 4 = 7</math> <i>Leads to</i> <math>30 + 40 = 70</math> <i>Leads to</i> <math>300 + 400 = 700</math></p>

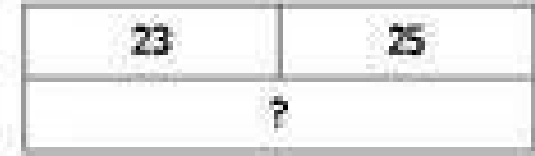
Bar model



$$3 + 4 = 7$$



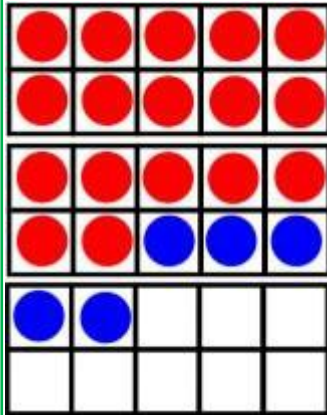
$$7 + 3 = 10$$



$$23 + 25 = 48$$

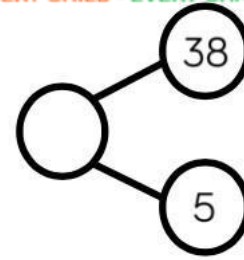
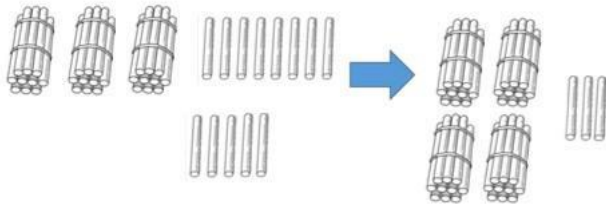


Add a two digit number and one.

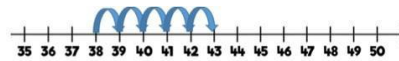


$$7 + 5 = 22$$

Use ten frame to make "magic ten"



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



$$38 + 5 = 43$$

$$17 + 5 = 22$$

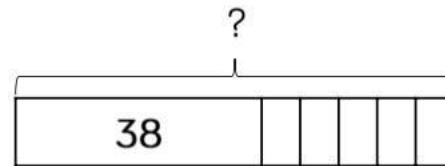
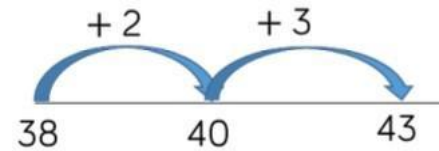
Explore related facts:

$$17 + 5 = 22$$

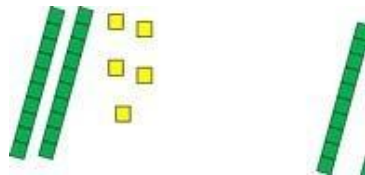
$$5 + 17 = 22$$

$$22 - 17 = 5$$

$$22 - 5 = 17$$



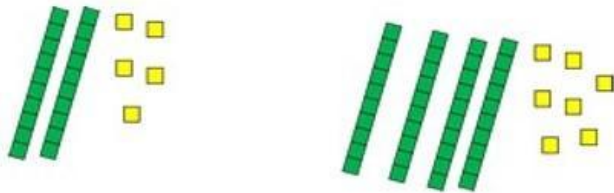
Add a two digit number and tens



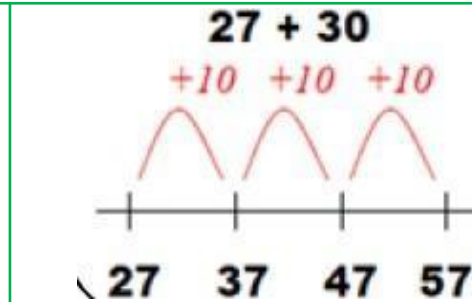
$25 + 10 = 35$

Explore that the ones digit does not change.

Add two twodigit numbers

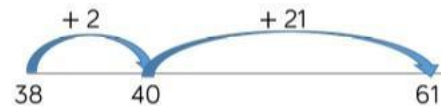


Model using dienes, place value counters and numicon.



$27 + 10 = 37$   
 $27 + 20 = 47$   
 $27 + \square = 57$

Use number line and bridge ten using part-part-whole if necessary

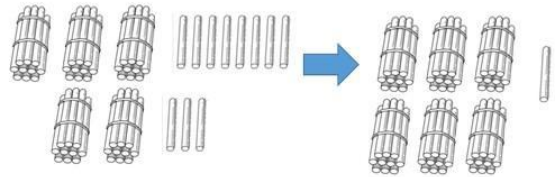


$25 + 47$

$20 + 5$      $40 + 7$

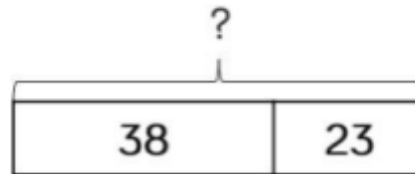
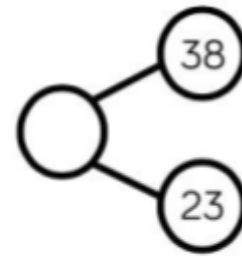
$20 + 40 = 60$   
 $5 + 7 = 12$   
 $60 + 12 = 72$





Tens	Ones

Tens	Ones



$$38 + 23 = 61$$



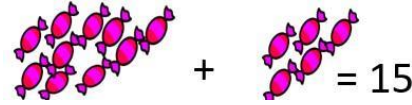
**Add three one-digit numbers**



Combine to make 10 first if possible, or bridge 10 then add third digit.

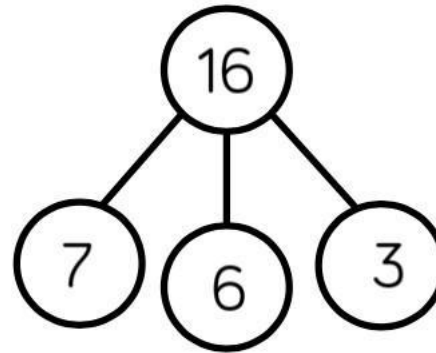
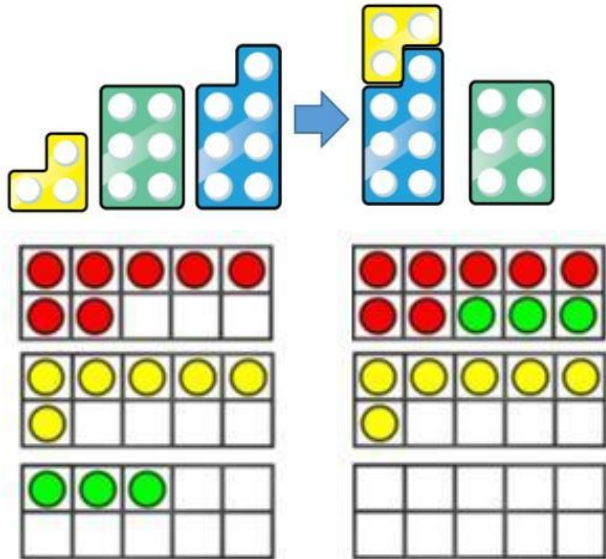
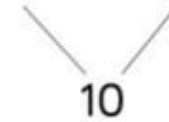


Regroup and draw representation

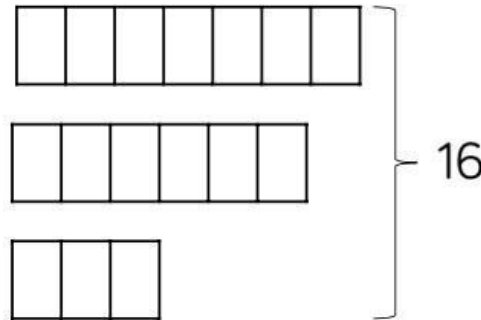


Combine the two number that make/bridge ten then add on the third.

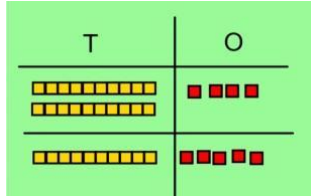
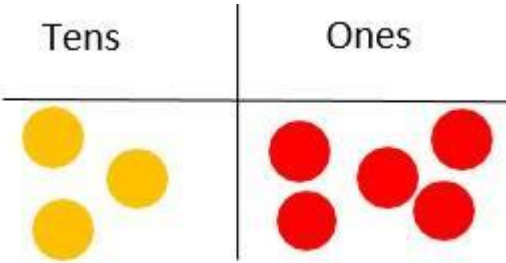
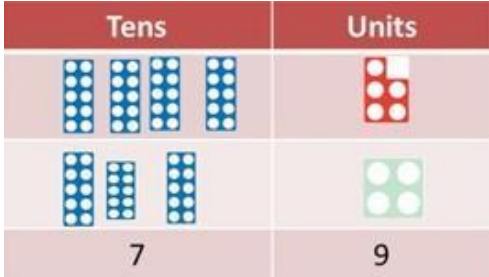
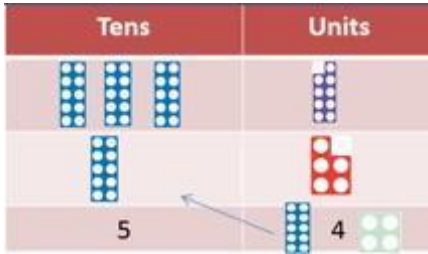
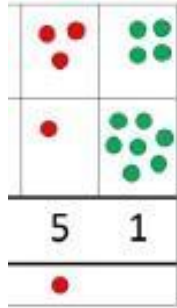
$$7 + 6 + 3 = 16$$



$$7 + 6 + 3 = 16$$





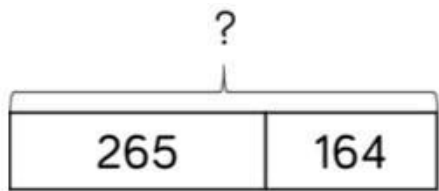
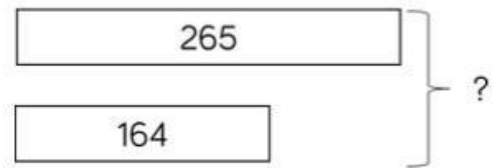
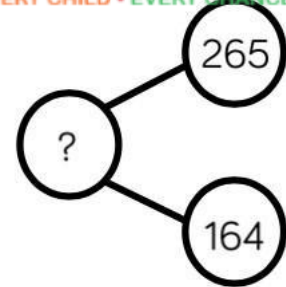
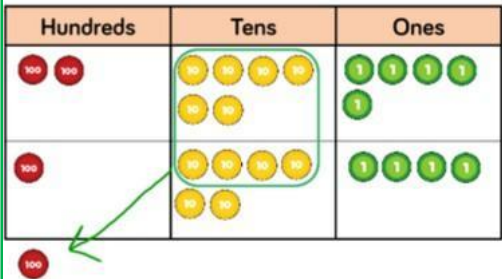
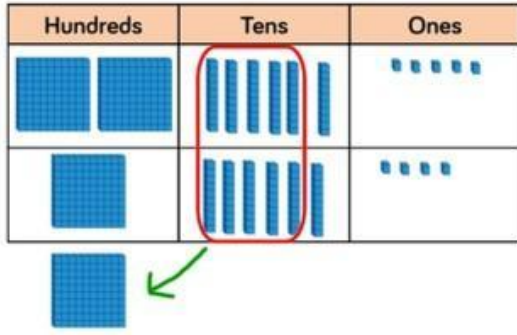
<p><b>Column Addition – no regrouping (friendly numbers)</b></p>	 <p>Model using dienes or Numicon. Add together the ones first, then the tens.</p>		$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ \hline 1 \end{array}$ <p>Add the ones first, then the tens, then the hundreds.</p>
	 <p>Children move to drawing the counters using a tens and one frame.</p>		
<p><b>Column Addition – with regrouping</b></p>	 <p>Exchange ten ones for a ten. Model using numicon and place value counters.</p>	 <p>Children to draw a representation of the grid to further support their understanding, carrying the ten underneath the line.</p>	$\begin{array}{r} 20 + 5 \\ 40 + 8 \\ 60 + 13 = 73 \end{array}$ $\begin{array}{r} 36 \\ + 85 \\ \hline 121 \\ \hline 1 \end{array}$ <p>Start by partitioning the numbers before formal column to show the exchanging.</p>

Addition Year 3-6

Objective & Strategy	Concrete	Pictorial	Abstract
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Year 3  
Add numbers with up  
to 3-digits

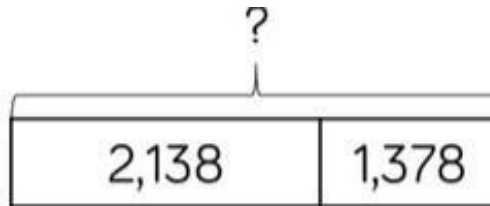
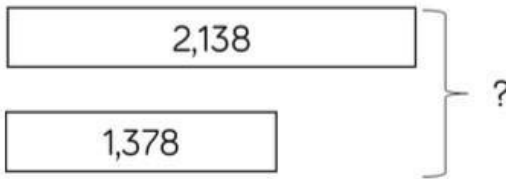
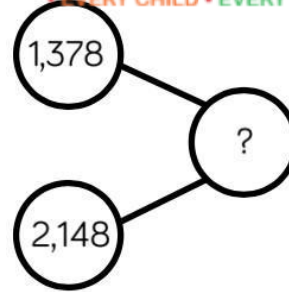
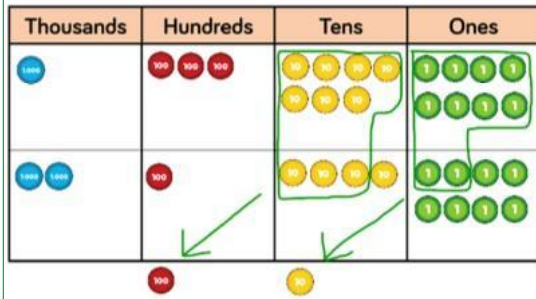
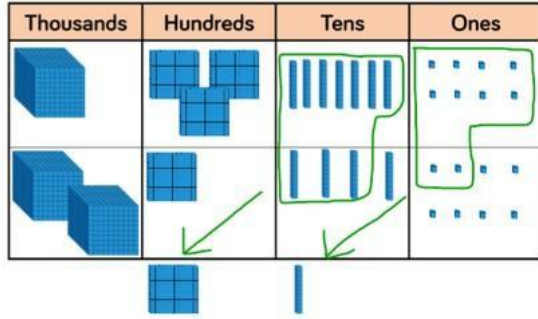


$265 + 164 = 429$

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



Year 4 Add numbers with up to four-digits



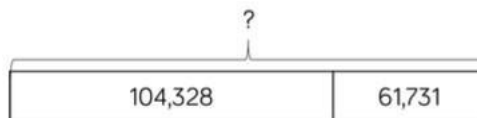
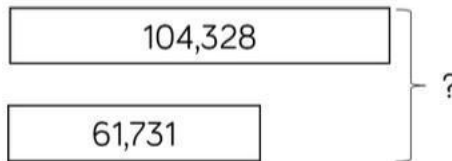
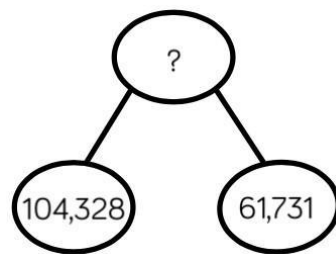
$$1,378 + 2,148 = 3,526$$

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



Year 5 and 6  
Add  
numbers  
with more  
than 4 digits

HTh	TTh	Th	H	T	O
10000		1000 1000 1000 1000	100 100 100 100	10 10	1 1 1 1 1 1 1 1
	1000 1000 1000 1000 1000 1000	1000	100 100 100 100 100 100 100	10 10 10 10	1



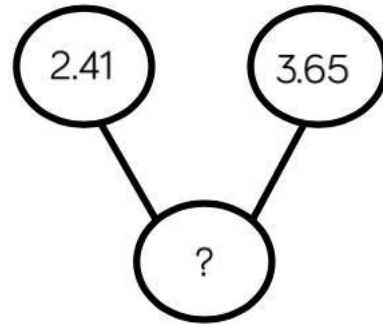
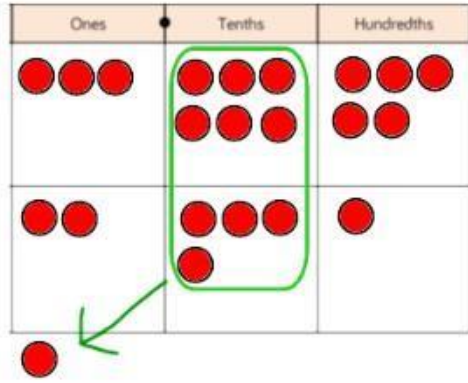
$$104,328 + 61,731 = 166,059$$

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

1

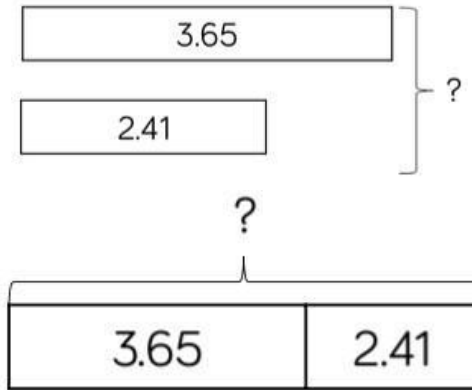
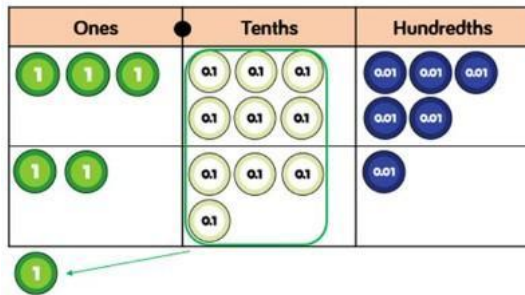


Year 5 and 6  
Add with up  
to 3 decimal  
places

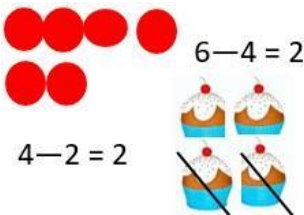
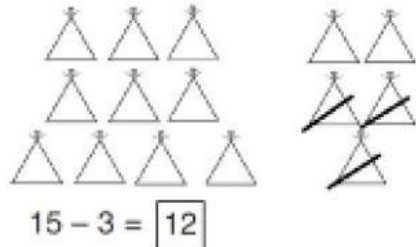

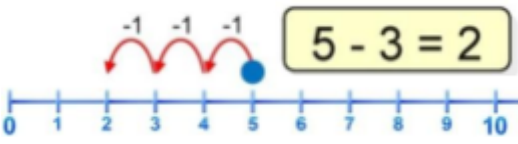


$$3.65 + 2.41 = 6.06$$

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

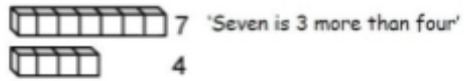
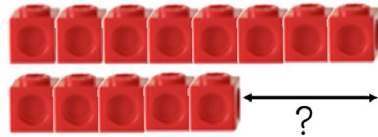




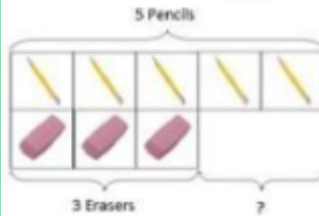
Objective & Strategy	Concrete	Pictorial	Abstract
<b>Taking away ones.</b>	 <p>Use physical objects, counters, cubes etc to show how objects can be taken away.</p>	 <p>Cross out drawn objects to show what has been taken away.</p>	$7 - 4 = 3$ $16 - 9 = 7$
<b>Counting back.</b>	 <p>Move objects away from the group, counting backwards.</p> <p>Move the beads along the bead string as you count backwards.</p>	 <p>Count back in ones using a number line.</p>	Put 13 in your head, count back 4. What number are you at?



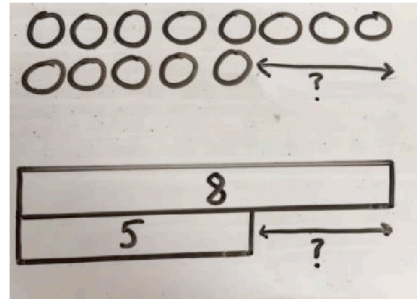
Find the difference.



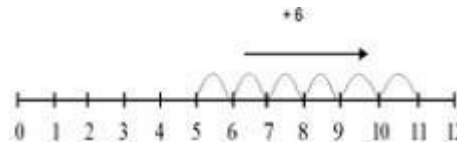
'I am 2 years older than my sister'



Compare objects and amounts.  
Lay objects to represent bar model.



Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.



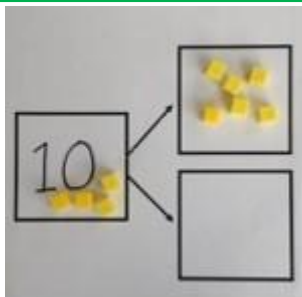
Count on using a number line to find the difference.

Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister?

Find the difference between 8 and 5.  
 $8 - 5$ , the difference is  $\square$

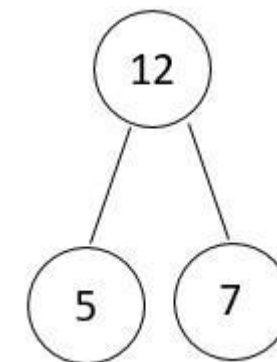
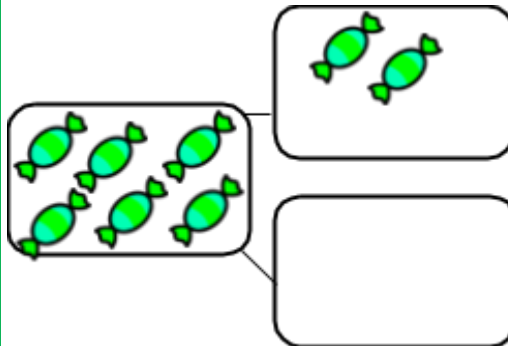
Children to explore why  
 $9 - 6 = 8 - 5 = 7 - 4$  have the same difference.

**Represent and use number bonds and related subtraction facts within 20. Part-part-whole model.**



Link to addition. Use part-part-whole model to model the inverse. If 10 is the whole and 6 is one of the parts, what is the other part?

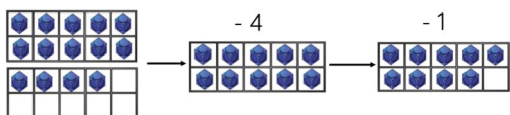
Use pictorial representations to show the part.



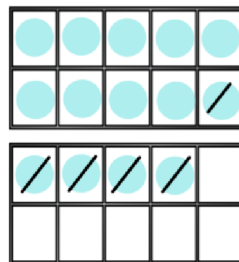
Move to using numbers within the part-part-whole model.

**Make 10.**

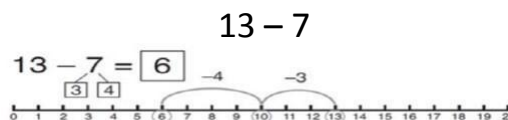
$$14 - 5$$



Make 14 of the ten frame. Take 4 away to make ten, then take one more away so that you have taken 5.



Children to present the ten frame pictorially and discuss what they did to make 10.



Jump back 3 first, then another 4. Use ten as the stopping point.

$$14 - 5 = 9$$

$$\begin{array}{c} 4 \quad 1 \end{array}$$

$$14 - 4 = 10$$

$$10 - 1 = 9$$

Children to show how they can make 10 by partitioning the subtrahend.

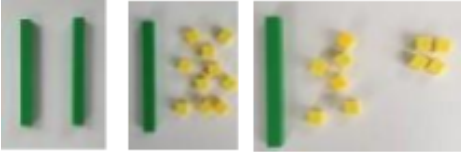

$$16 - 8$$

*How many do we take off first to get to 10? How many left to take off?*



<p>Bar Model.</p>	 <p><math>5 - 2 = 3</math></p>		<table border="1"><tr><td>8</td><td>2</td></tr></table> <p><math>10 = 8 + 2</math> <math>10 = 2 + 8</math> <math>10 - 2 = 8</math> <math>10 - 8 = 2</math></p>	8	2
8	2				

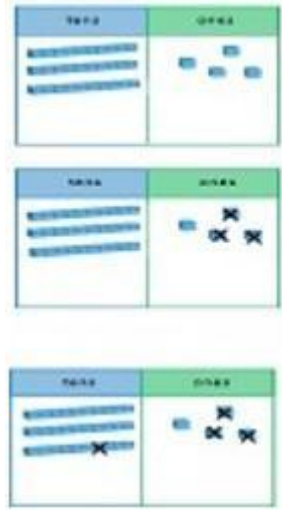
Subtraction Year 2

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Regroup a ten into ten ones</p>	 <p>Use a place value chart to show how to change a ten into ten ones, use the term "take and make".</p>	 <p><math>20 - 4 =</math></p>	<p><math>20 - 4 = 16</math></p>

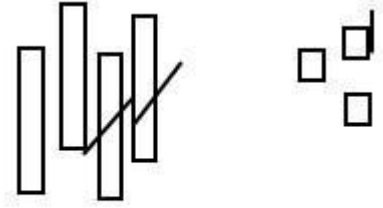


Partition to subtract without regrouping (friendly numbers).

$$34 - 13 = 21$$



Use dienes to show how to partition the number when subtracting without regrouping.

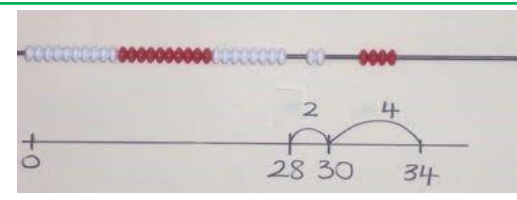


$$43 - 21 = 22$$

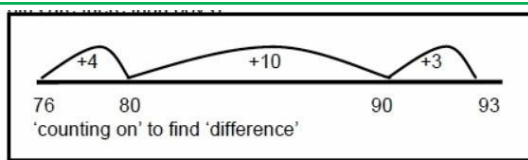
Children draw representations of dienes and cross off.

$$43 - 21 = 22$$

Make ten strategies. Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.



Use a bead bar or bead strings to model counting to next ten and the rest.

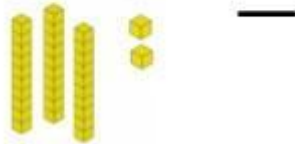


Use a number line to count on to next ten and then the rest.

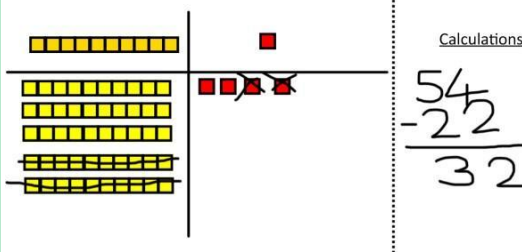
$$93 - 76 = 17$$



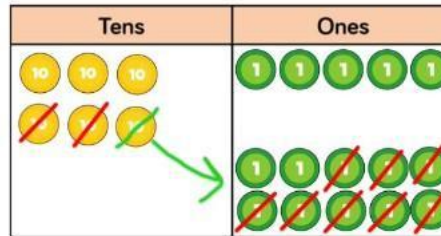
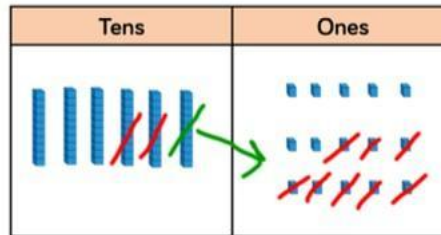
Column subtraction without regrouping (friendly numbers)



Use base 10 or numicon to model.



Draw representations to support understanding.



Calculations

$$\begin{array}{r} 54 \\ - 22 \\ \hline 32 \end{array}$$

$$\begin{array}{r} 47 - 24 = 23 \\ - 20 + 7 \\ \hline 20 + 3 \end{array}$$

$$\begin{array}{r} 32 \\ - 12 \\ \hline 20 \end{array}$$

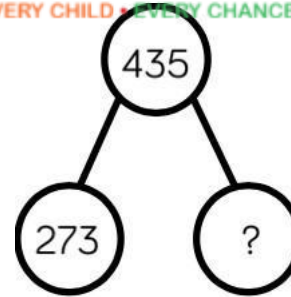
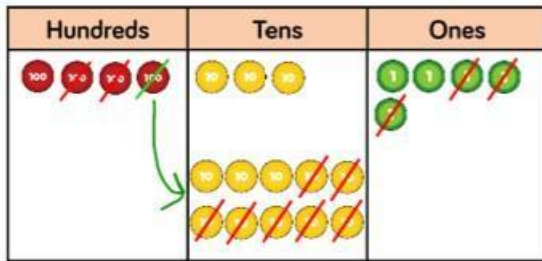
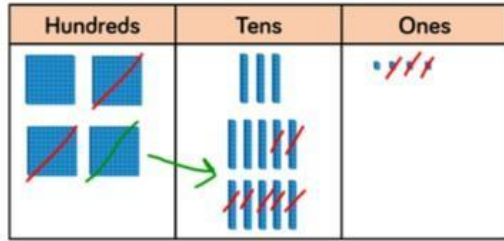
Intermediate step may be needed to lead to clear subtraction understanding.

Subtraction Year 3-6

Objective Strategy	&	Concrete	Pictorial	Abstract
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Year 3  
Subtract numbers  
with up to 3 digits



435

273

435

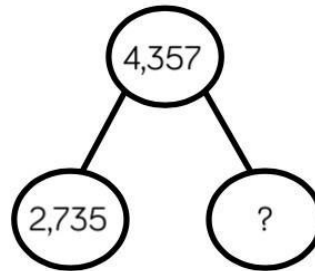
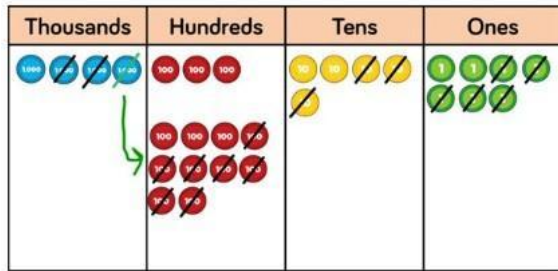
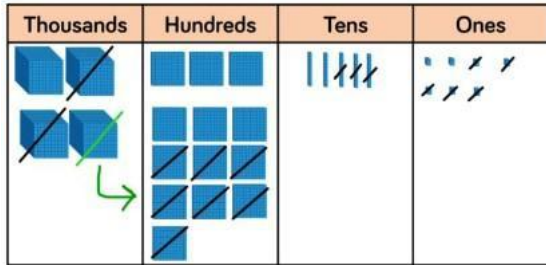
273	?
-----	---

$$435 - 273 = 262$$

$$\begin{array}{r} \phantom{0}^3 \phantom{0}^1 \\ 435 \\ - 273 \\ \hline 262 \end{array}$$

Year 4  
Subtract numbers  
with up to 4 digits

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



4,357

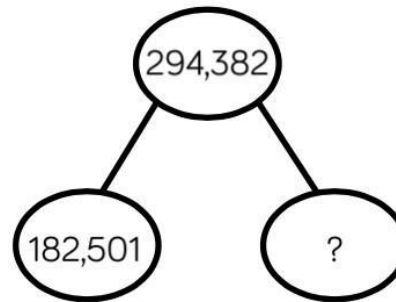
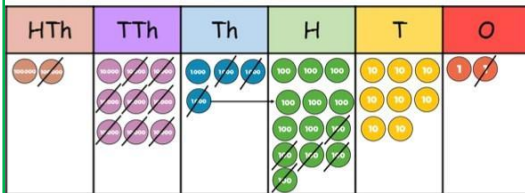
2,735

4,357

2,735	?
-------	---

$$\begin{array}{r}
 3 \ 1 \\
 \cancel{4}357 \\
 - 2735 \\
 \hline
 1622
 \end{array}$$

Year 5 and 6  
Subtract numbers  
with more than  
4 digits



294,382 – 182,501 = 111,881

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



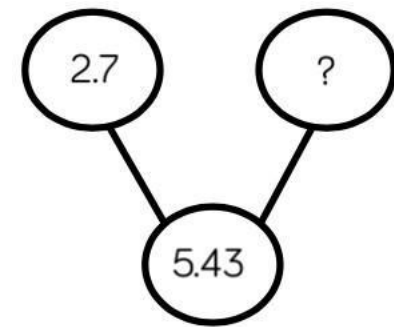
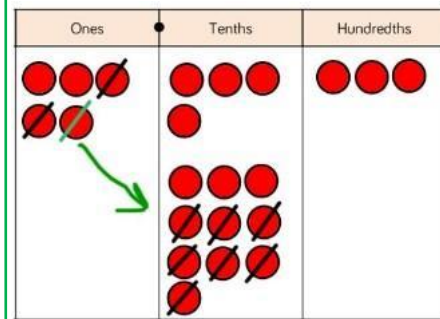
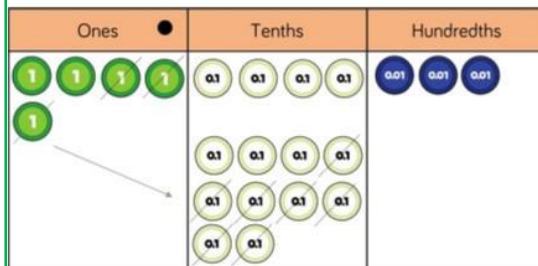
294,382

182,501 ← →  
?

294,382

182,501      ?

Year 5 and 6  
Subtract with up to  
3 decimal places



5.43

2.7 ← →  
?

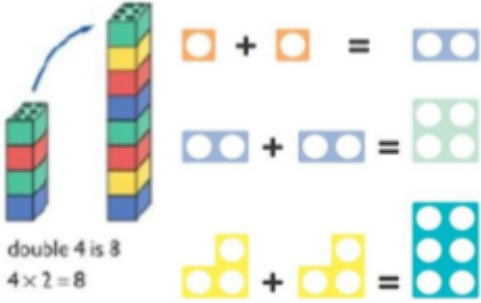

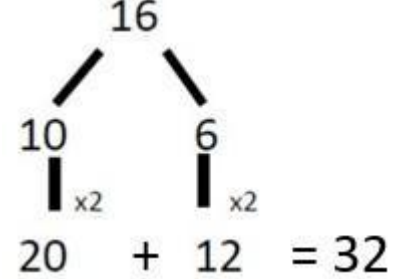
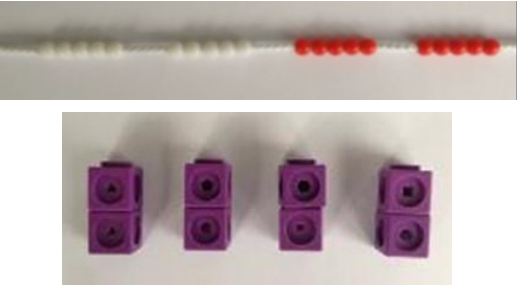
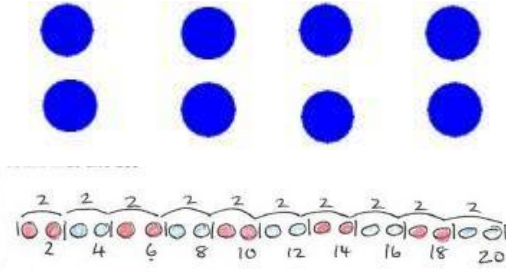

5.43

2.7      ?


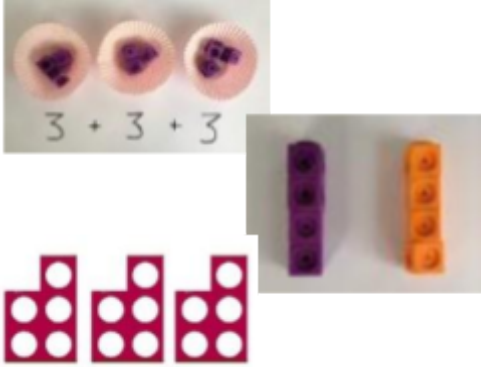
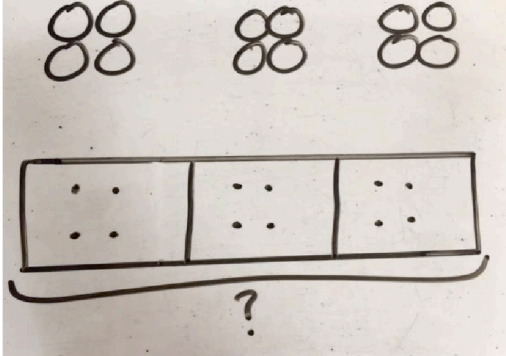

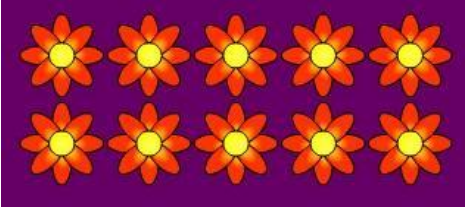
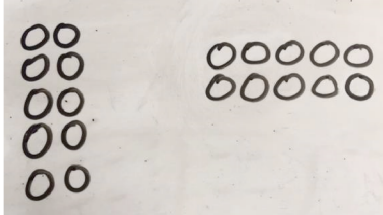
$5.43 - 2.7 = 2.73$

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

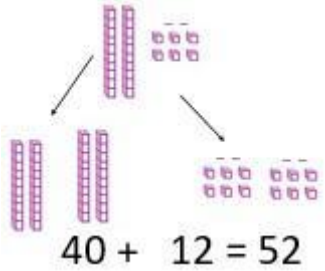
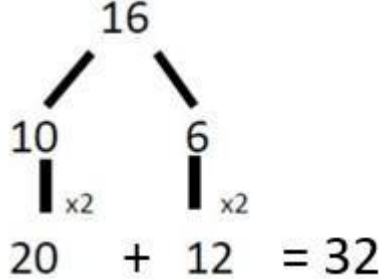
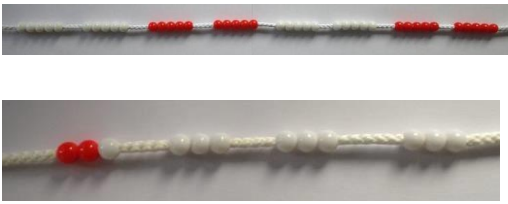
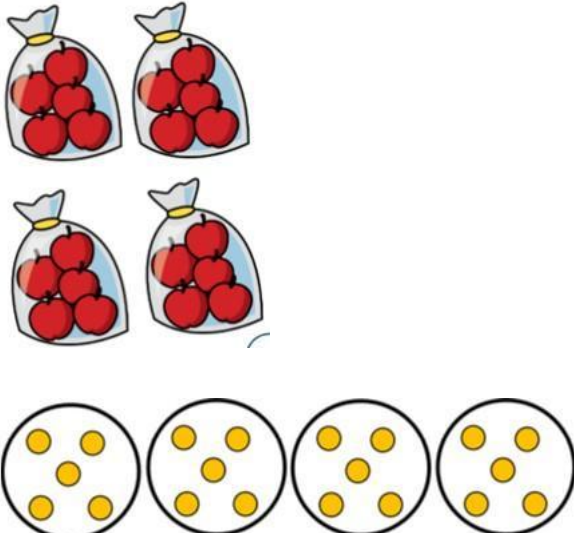
Multiplication Year 1

Objective & Strategy	Concrete	Pictorial	Abstract
<p><b>Doubling.</b></p>	 <p>double 4 is 8 <math>4 \times 2 = 8</math></p> <p>Use practical activities using manipulatives including cubes and numicon to demonstrate doubling.</p>	<p>Double 4 is 8</p>  <p>Draw pictures to show how to double numbers.</p>	 <p>Partition a number and then double each part before recombining it back together.</p>
<p><b>Counting in multiples.</b></p>	 <p>Count the groups as children are skip counting, children may use fingers as they are skip counting.</p>	 <p>Children make representations to show counting in multiples.</p>	<p>Count in multiples of a number aloud.</p> <p>Write sequences with multiples of number.</p> <p>2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30</p>
<p><b>Making equal groups and counting the total</b></p>		<p>Draw  to show <math>2 \times 3 = 6</math></p> <p>Draw and make representations.</p>	<p><math>2 \times 4 = 8</math></p>



	 <p>Use manipulatives to create equal groups.</p>		
<p>Repeated addition</p>	 <p>Use different objects to add equal group.</p>	 <p>Children to represent the practical resources in a picture and use a bar model.</p>	 <p>Write addition sentences to describe objects and pictures.</p>
<p>Understanding arrays</p>	 <p>Use objects laid out in arrays to find the answers to 2 lots of 5, 3 lots of 2 etc.</p>	 <p>Draw representation of arrays to show understanding.</p>	$10 = 2 \times 5$ $5 \times 2 = 10$ $2 + 2 + 2 + 2 + 2 = 10$ $10 = 5 + 5$ <p>Children to be able to use an array to write a range of calculations.</p>



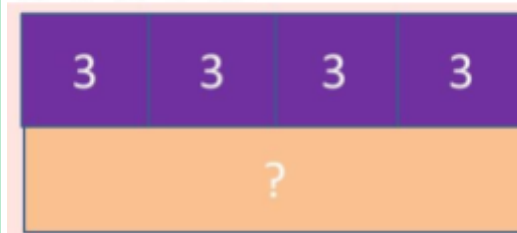
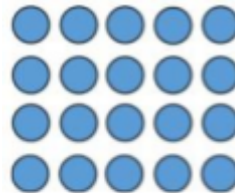
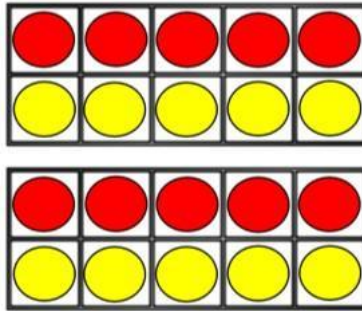
Objective & Strategy	Concrete	Pictorial	Abstract
<b>Doubling</b>	 <p>40 + 12 = 52</p> <p>Model doubling using dienes and place value counters.</p>	<p>Draw pictures and representations to show how to double numbers.</p>	 <p>20 + 12 = 32</p> <p>Partition a number and then double each part before recombining it back together.</p>
<b>Counting in multiples of 2, 3, 4, 5, 10 from 0 (repeated addition)</b>	 <p>5 + 5 + 5 + 5 +</p> <p>40</p>	 <p>5 + 5 + 5 + 5 =</p>	$4 \times 3 = \square$ <p>Count in multiples of a number aloud.</p> <p>Write sequences with multiples of numbers.</p> <p>0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25, 30</p>



Count the groups as children are skip counting, children may use their fingers as they are skip



counting. Use bar models.



Number lines, counting sticks and bar models should be used to show representation of counting in multiples.

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

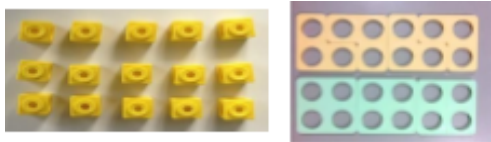
$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

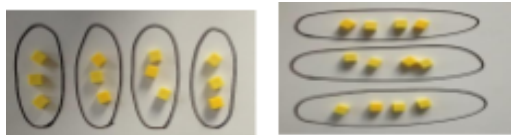
One bag holds 5 apples.  
How many apples do 4 bags hold?



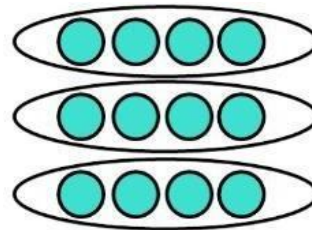
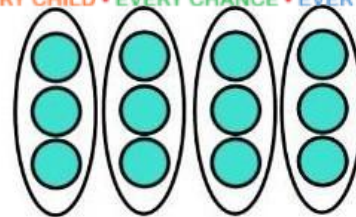
**Multiplication is commutative**



Create arrays using counters and cubes and numicon.



Pupils should understand that an array can represent different equations and that as multiplication is commutative, the order of the multiplication does not affect the answer.

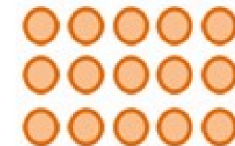


Use representative of arrays to show different calculations and explore commutativity.

$$12 = 3 \times 4$$

$$12 = 4 \times 3$$

Use an array to write multiplication sentences and reinforce repeated addition.



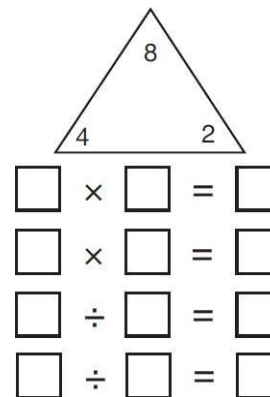
$$5 + 5 + 5 = 15$$

$$3 + 3 + 3 + 3 + 3 = 15$$

$$5 \times 3 = 15$$

$$3 \times 5 = 15$$

**Using the Inverse This should be taught alongside division, so pupils learn how they work alongside each other.**



$$2 \times 4 = 8$$

$$4 \times 2 = 8$$

$$8 \div 2 = 4$$

$$8 \div 4 = 2$$

$$8 = 2 \times 4$$

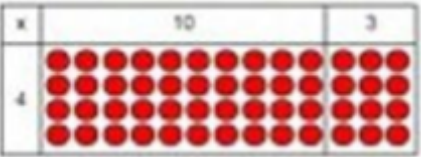
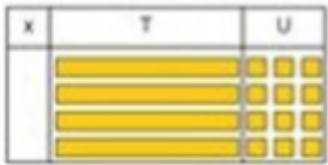


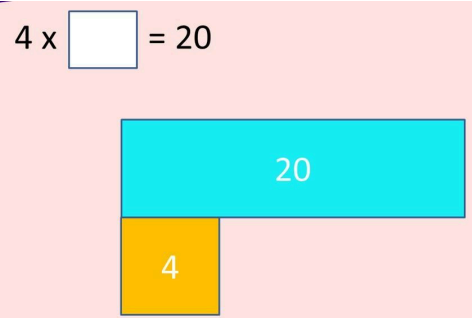

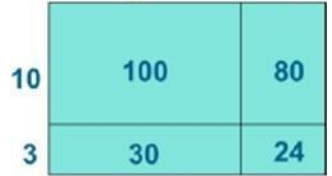
$$8 = 4 \times 2$$

$$2 = 8 \div 4$$

$$4 = 8 \div 2$$

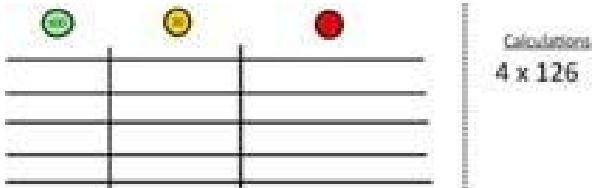
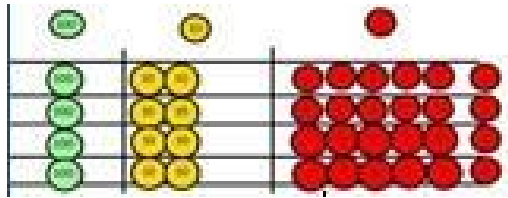
Show all 8 relevant fact family sentences.



Objective & Strategy	Concrete	Pictorial	Abstract
<p><b>Grid method.</b></p> <p>Show the links with arrays to first introduce the grid method. Move onto dienes to move towards a more compact method.</p> <p>Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.</p>  <p>4 rows of 10 4 rows of 3</p>  <p>4 rows of 13</p> <p>Fill each row with 126. Add up each column, starting with the ones making any exchanges needed. Then you have your answer.</p>   <p>Calculations <math>4 \times 126</math></p>	<p>Children can represent their work with place value counters in a way that they understand.</p> <p>They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.</p>  <p><math>4 \times \square = 20</math></p> <p>Bar models are used to explore missing numbers.</p>	<p>Children can represent their work with place value counters in a way that they understand.</p> <p>They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.</p>  <p><math>210 + 35 = 245</math></p> <p>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.</p>  <p>10 0 8 0 30 + 4 214 1</p> <p>Moving forward, multiply by a twodigit number showing the different rows within the grid method.</p>	



Multiplication Year 4

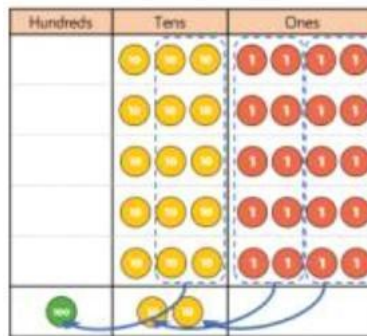
Objective & Strategy	Concrete	Pictorial	Abstract						
<p><b>Grid method recap from Year 3 for twodigit x one-digit</b></p>	<p>Move on to place value counters to show how we are finding groups of a number. We are</p>  <p>multiplying by 4 so we need 4 rows.</p> <p>Fill each row with 126.</p>  <p>Add up each column, starting with the ones making any exchanges needed. Then you have your answer.</p>	<p>Children can represent their work with place value counters in a way that they understand.</p> <p>They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.</p>	<table border="1" data-bbox="1637 376 1973 475"><tr><td>×</td><td>30</td><td>5</td></tr><tr><td>7</td><td>210</td><td>35</td></tr></table> <p><math>210 + 35 = 245</math></p> <p>Start with multiplying by one-digit numbers and showing the clear addition alongside the grid.</p>	×	30	5	7	210	35
×	30	5							
7	210	35							



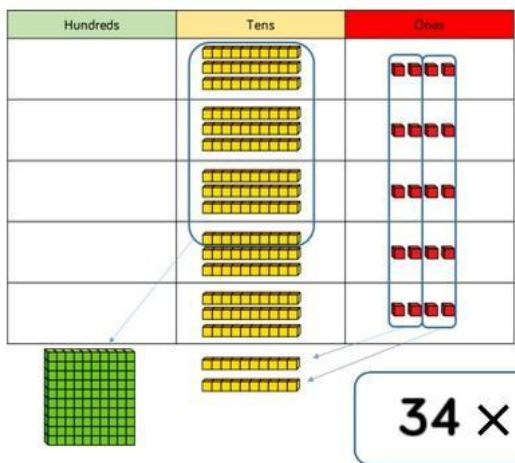
**Column multiplication (two-digit by onedigit)**

Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping.  $321 \times 6 = 642$

It is important at this stage that they always multiply the ones first. The corresponding long multiplication is modelled alongside.



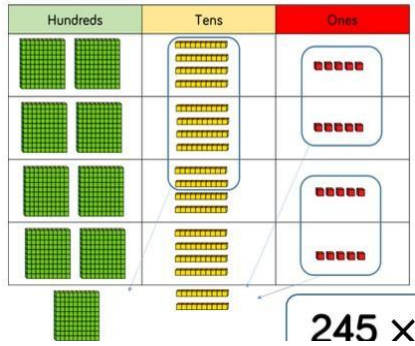
	H	T	O	
		3	4	
x			5	
		2	0	(5 × 4)
+	1	5	0	(5 × 30)
	1	7	0	



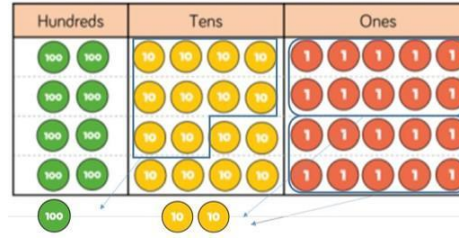
	H	T	O
		3	4
x			5
	1	7	0
	1	2	



Column multiplication (three-digit by onedigit)



245 x



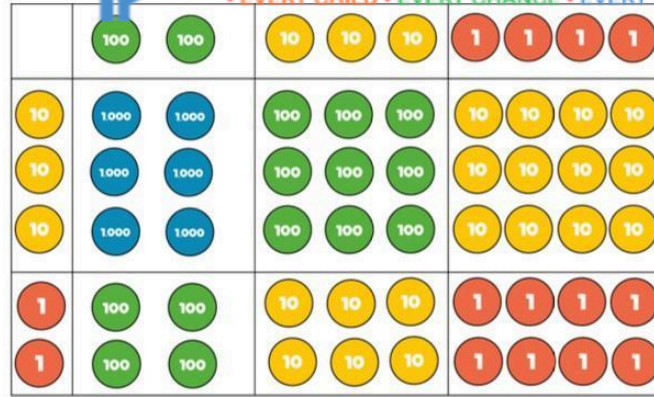
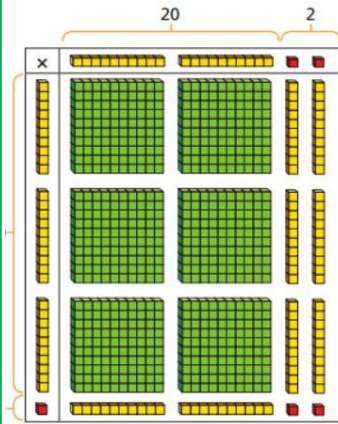
	H	T	O
	2	4	5
x			4
<hr/>			
	9	8	0
	1	2	

Multiplication Year 5-6

Objective & Strategy	Concrete	Pictorial	Abstract																														
Column multiplication for three and four-digits x one-digit			<table border="1"> <thead> <tr> <th></th> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>8</td> <td>2</td> <td>6</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td colspan="5"><hr/></td> </tr> <tr> <td></td> <td>5</td> <td>4</td> <td>7</td> <td>8</td> </tr> <tr> <td></td> <td>2</td> <td></td> <td>1</td> <td></td> </tr> </tbody> </table>		Th	H	T	O		1	8	2	6	x				3	<hr/>						5	4	7	8		2		1	
	Th	H	T	O																													
	1	8	2	6																													
x				3																													
<hr/>																																	
	5	4	7	8																													
	2		1																														



Column multiplication for two-digit x two-digit



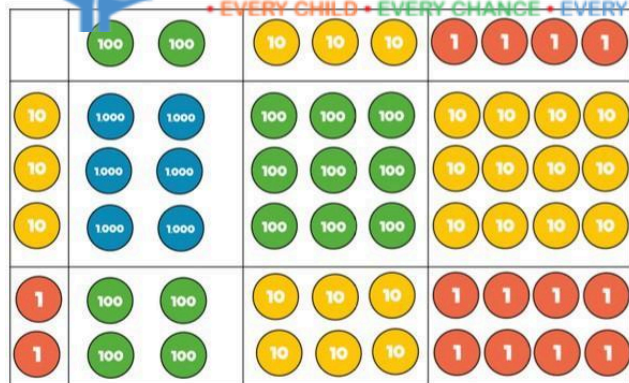
×	20	2
30	600	60
1	20	2

$$\begin{array}{r}
 600 \\
 60 \\
 20 \\
 + 2 \\
 \hline
 682
 \end{array}$$

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



Multiply  
threedigit  
numbers  
by two-digit  
numbers



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

6000  
900  
120  
400  
60  
+ 8  
7488

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



Multiply fourdigit numbers by two-digit numbers



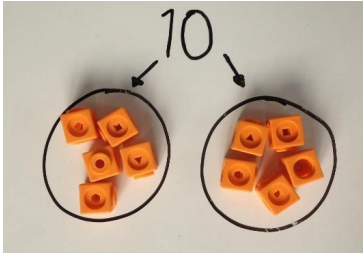

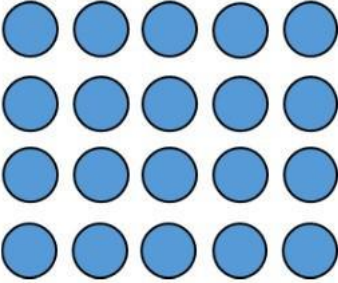
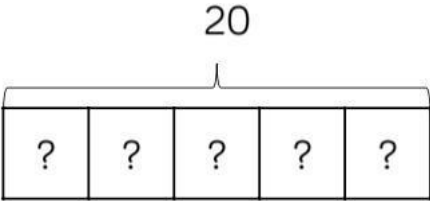



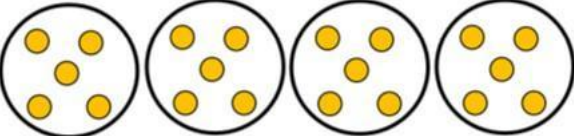
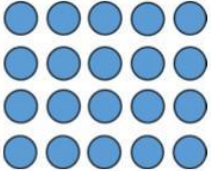
TTh	Th	H	T	O
	2	7	3	9
×			2	8
2	1	9	1	2
<sub>2</sub>	<sub>5</sub>	<sub>3</sub>	<sub>7</sub>	
5	4	7	8	0
<sub>1</sub>		<sub>1</sub>		
7	6	6	9	2
				<sub>1</sub>

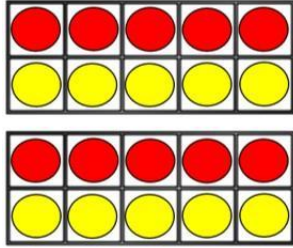
Multiplication Year 6

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplying decimals up to two decimal places by a single digit.			<p>Remind children that the single digit belongs to the ones column. Line up the decimal point in the question and the answer.</p>

Division Year 1



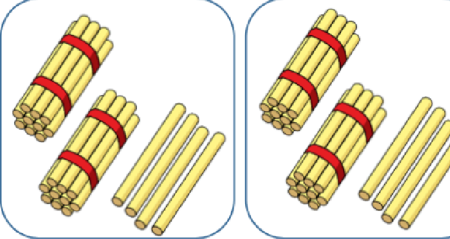
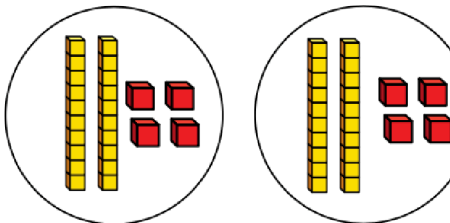
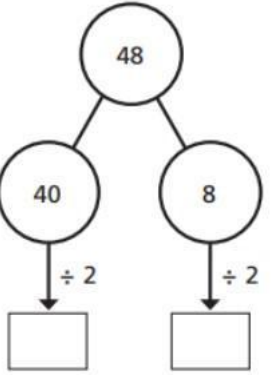
Objective & Strategy	Concrete	Pictorial	Abstract
<b>Division as sharing</b>	   <p>I have 10 cubes; can you share them equally in 2 groups?</p>	  	 $20 \div 5 = 4$ <div style="border: 1px solid black; border-radius: 10px; padding: 10px; width: fit-content; margin: 10px auto;"><p>There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?</p></div>
<b>Division as grouping</b>	 		 $20 \div 5 = 4$



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



Division Year 2

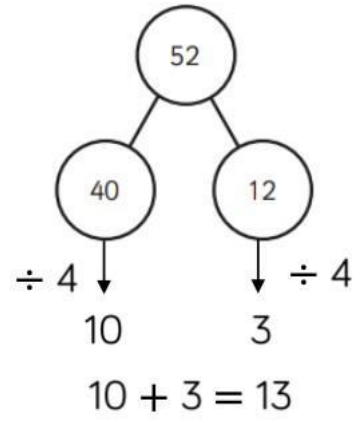
Objective & Strategy	Concrete	Pictorial	Abstract						
Divide two-digit by one-digit (sharing with no exchange)	 	<table border="1" data-bbox="795 319 1288 526"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>10 10</td><td>1 1 1 1</td></tr><tr><td>10 10</td><td>1 1 1 1</td></tr></tbody></table> 	Tens	Ones	10 10	1 1 1 1	10 10	1 1 1 1	$48 \div 2 = 24$
Tens	Ones								
10 10	1 1 1 1								
10 10	1 1 1 1								

Division Year 3

Objective & Strategy	Concrete	Pictorial	Abstract
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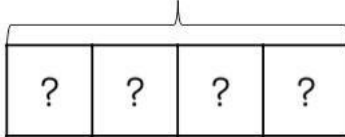
Divide two-digit by 1-digit (share with exchange)



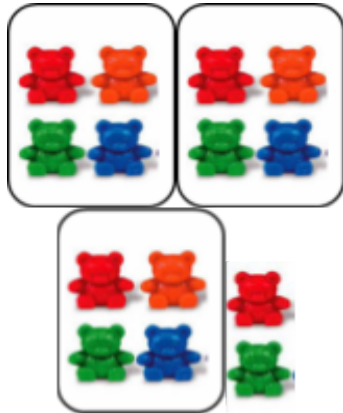
$52 \div 4 = 13$



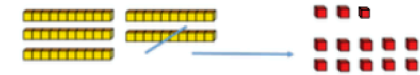
52



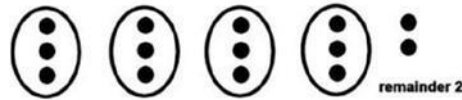
Divide two-digit by one-digit (sharing with remainders)



Divide objects between groups and see how much is left over.

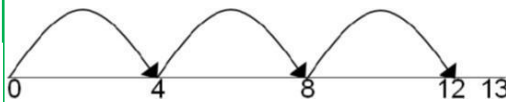


Tens	Ones



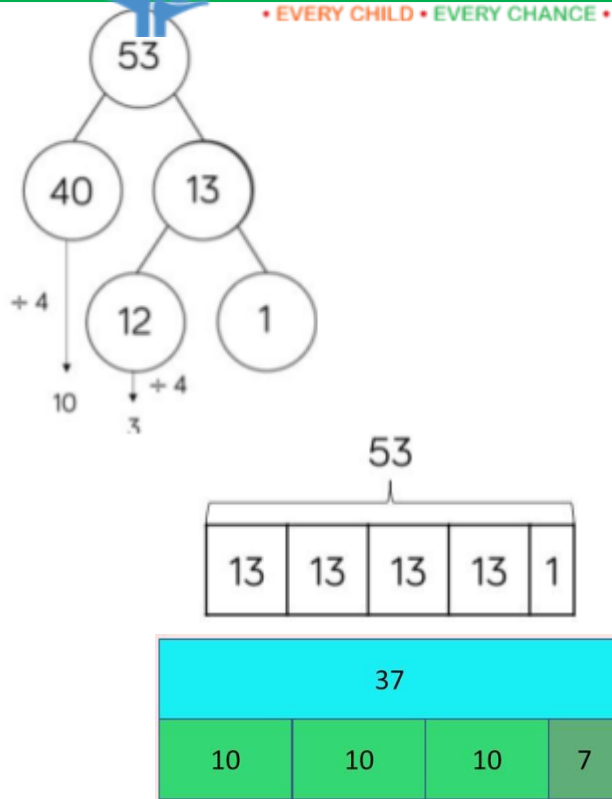
Draw dots and group them to divide an amount and clearly show a remainder

Tens	Ones



Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.

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



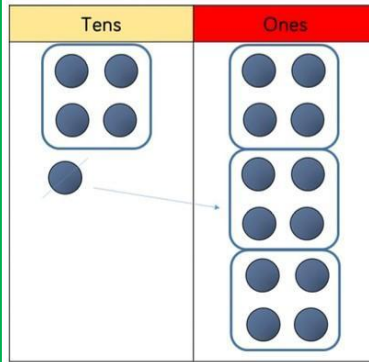
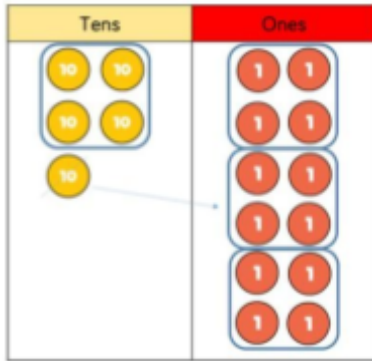
Use bar models to show division with remainders.

Division Year 4 - 6

Objective & Strategy	Concrete	Pictorial	Abstract
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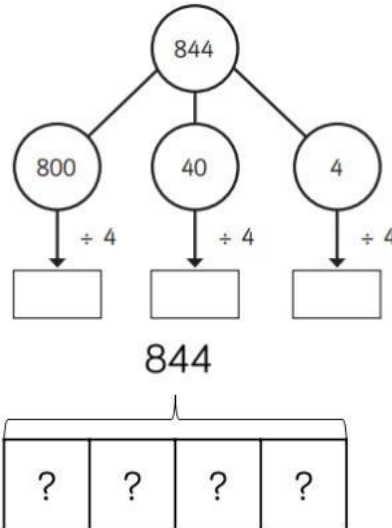
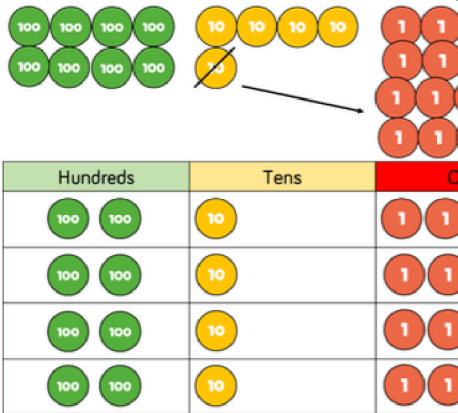


Year 4  
Divide  
two-digit by  
one-digit  
(grouping)



		1	3	
	4	5	12	

Year 4 and 5  
Divide  
threedigits by  
onedigit  
(sharing)

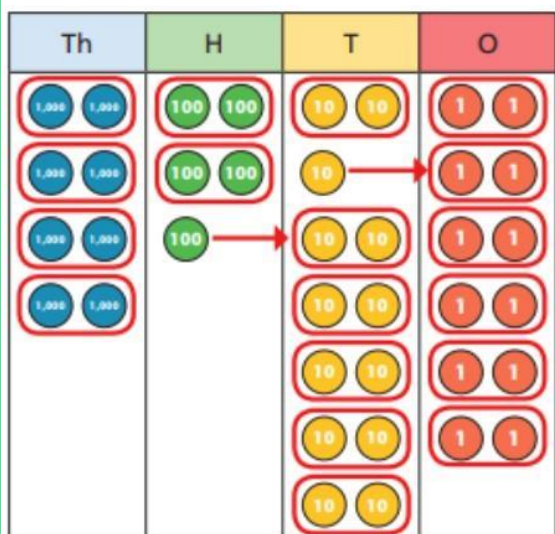
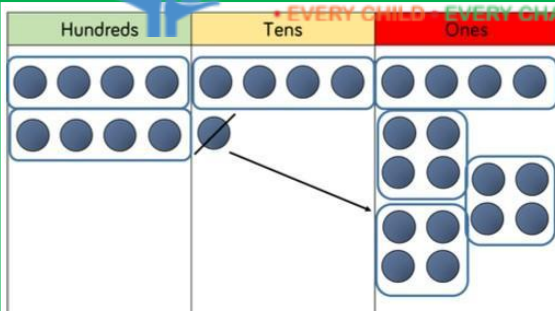
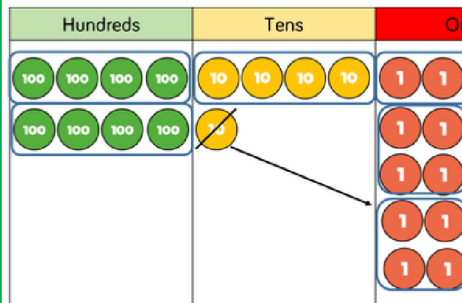


**844 ÷ 4 = 211**



Year 5 and 6  
Divide  
threedigit by  
onedigit  
(grouping)

Divide  
fourdigits by  
onedigit



		2	1	4
	4	8	5	<sup>1</sup> 6

	4	2	6	6
2	8	5	<sup>1</sup> 3	<sup>1</sup> 2



Year 6  
Division with  
remainders

Begin with divisions that divide equally  
with no

$$\begin{array}{r} 218 \\ 3 \overline{) 654} \\ \underline{6} \phantom{4} \\ 54 \\ \underline{54} \\ 0 \end{array}$$
$$\begin{array}{r} 4872 \\ 4 \overline{) 19488} \\ \underline{16} \phantom{88} \\ 348 \\ \underline{32} \phantom{8} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

remainder.

Move onto divisions with a remainder.

$$\begin{array}{r} 86 \text{ r } 2 \\ 3 \overline{) 258} \\ \underline{24} \phantom{0} \\ 18 \\ \underline{18} \\ 0 \end{array}$$
$$\begin{array}{r} 5432 \\ 5 \overline{) 27160} \\ \underline{25} \phantom{00} \\ 216 \\ \underline{20} \phantom{0} \\ 16 \\ \underline{15} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

Finally move into decimal places to divide  
the total accurately.

$$\begin{array}{r} 14.6 \\ 16 \overline{) 224.4} \\ \underline{16} \phantom{00} \\ 64 \\ \underline{64} \\ 0 \end{array}$$
$$\begin{array}{r} 35 \\ 35 \overline{) 1225.0} \\ \underline{105} \phantom{00} \\ 175 \\ \underline{175} \\ 0 \end{array}$$

$$\begin{array}{r} 0663 \text{ r } 5 \\ 8 \overline{) 4309} \\ \underline{32} \phantom{00} \\ 130 \\ \underline{132} \\ 9 \end{array}$$



Objective & Strategy	Concrete	Pictorial	Abstract																																											
<b>Divide multi digits by 2digits (short division)</b>		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math>7,335 \div 15 = 489</math> </div> <table border="1" style="margin-top: 10px; border-collapse: collapse; text-align: center;"> <tr> <td></td><td></td><td>0</td><td>4</td><td>8</td><td>9</td></tr> <tr> <td>15</td><td>7</td><td>7</td><td>3</td><td>13</td><td>13</td></tr> <tr> <td></td><td></td><td></td><td></td><td>3</td><td>5</td></tr> </table> <table border="1" style="margin-top: 10px; border-collapse: collapse; text-align: center;"> <tr> <td>15</td><td>30</td><td>45</td><td>60</td><td>75</td><td>90</td><td>105</td><td>120</td><td>135</td><td>150</td></tr> </table>			0	4	8	9	15	7	7	3	13	13					3	5	15	30	45	60	75	90	105	120	135	150	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td></td><td></td><td>0</td><td>3</td><td>6</td></tr> <tr> <td></td><td>12</td><td>4</td><td>4</td><td>3</td></tr> <tr> <td></td><td></td><td></td><td>7</td><td>2</td></tr> </table>			0	3	6		12	4	4	3				7	2
		0	4	8	9																																									
15	7	7	3	13	13																																									
				3	5																																									
15	30	45	60	75	90	105	120	135	150																																					
		0	3	6																																										
	12	4	4	3																																										
			7	2																																										
<b>Divide multidigits by twodigits (long division)</b>			<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td></td><td></td><td>0</td><td>3</td><td>6</td></tr> <tr> <td>1</td><td>2</td><td>4</td><td>3</td><td>2</td></tr> <tr> <td></td><td>-</td><td>3</td><td>6</td><td>0</td></tr> <tr> <td></td><td></td><td></td><td>7</td><td>2</td></tr> <tr> <td></td><td>-</td><td></td><td>7</td><td>2</td></tr> <tr> <td></td><td></td><td></td><td></td><td>0</td></tr> </table> <div style="margin-left: 20px;"> <p>(x30)</p> <ul style="list-style-type: none"> <li><math>12 \times 1 = 12</math></li> <li><math>12 \times 2 = 24</math></li> <li><math>12 \times 3 = 36</math></li> <li><math>12 \times 4 = 48</math></li> <li><math>12 \times 5 = 60</math></li> </ul> <p>(x6)</p> <ul style="list-style-type: none"> <li><math>12 \times 6 = 72</math></li> <li><math>12 \times 7 = 84</math></li> <li><math>12 \times 8 = 96</math></li> <li><math>12 \times 7 = 108</math></li> <li><math>12 \times 10 = 120</math></li> </ul> </div>			0	3	6	1	2	4	3	2		-	3	6	0				7	2		-		7	2					0													
		0	3	6																																										
1	2	4	3	2																																										
	-	3	6	0																																										
			7	2																																										
	-		7	2																																										
				0																																										



	0	4	8	9		
15	7	3	3	5		
-	6	0	0	0	(x400)	1 × 15 = 15
	1	3	3	5		2 × 15 = 30
-	1	2	0	0	(x80)	3 × 15 = 45
		1	3	5		4 × 15 = 60
-		1	3	5	(x9)	5 × 15 = 75
				0		10 × 15 = 150

Alternative “chunking” method to be used to only support with pupils needing identified as needing additional support/ alternative strategy.

			2	4	r	1	2	
1	5	3	7	2				1 × 15 =
-		3	0	0				2 × 15 =
			7	2				3 × 15 =
-			6	0				4 × 15 =
			1	2				5 × 15 =
								10 × 15 =

Signed CEO:

Signed Chair of Directors:

Policy to be reviewed:

