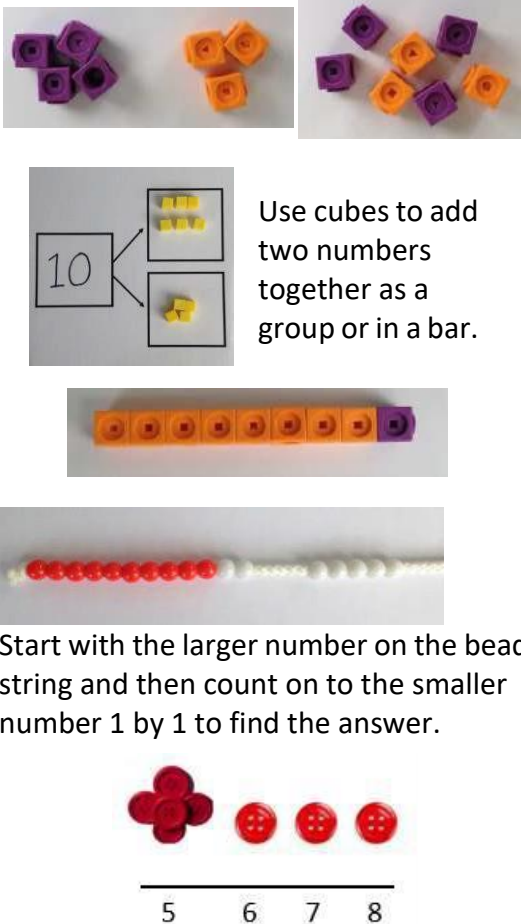
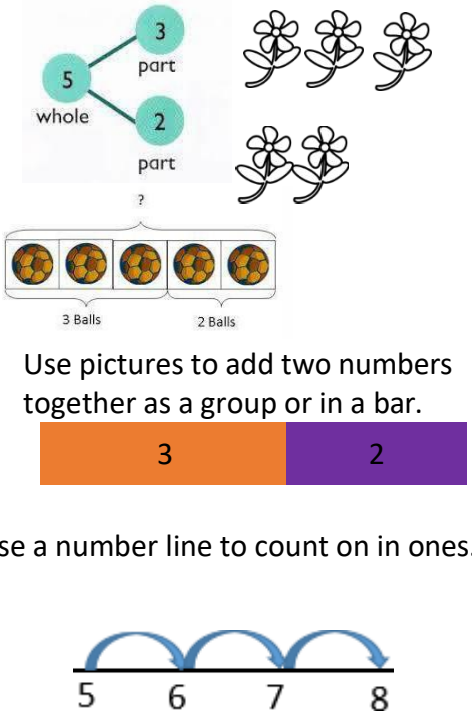
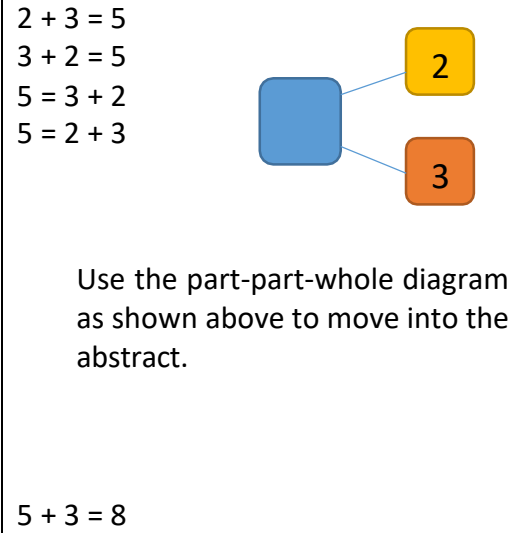
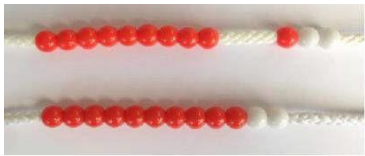




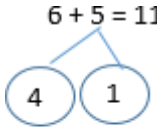

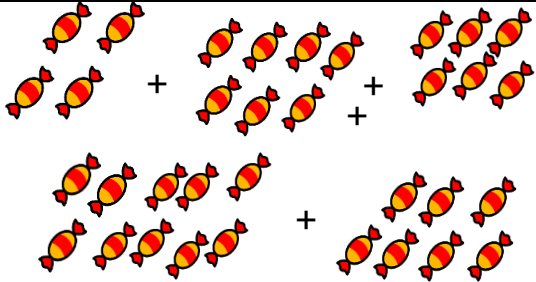
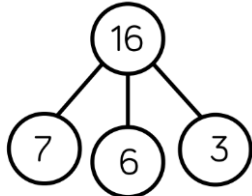
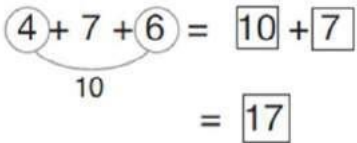


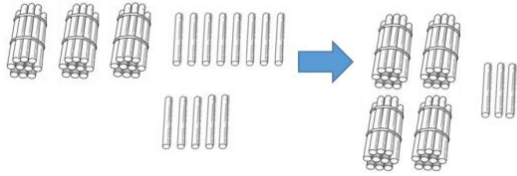
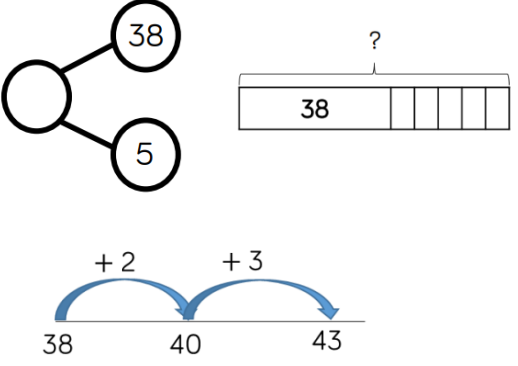
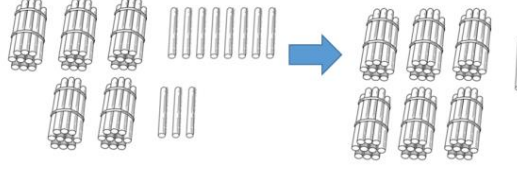
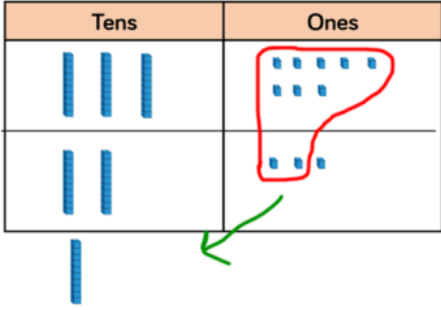
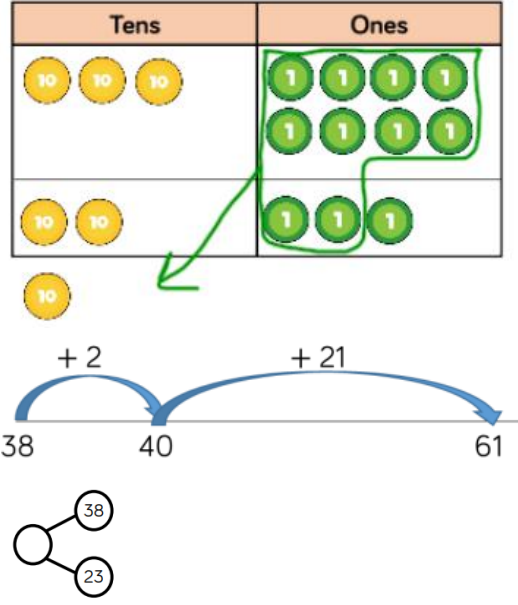
# CALCULATION GUIDANCE: Addition

	Objective	Concrete	Pictorial	Abstract
Year 1	Add two 1-digit numbers to 10	 <p>Use cubes to add two numbers together as a group or in a bar.</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>Use pictures to add two numbers together as a group or in a bar.</p> <p>Use a number line to count on in ones.</p>	 <p>Use the part-part-whole diagram as shown above to move into the abstract.</p>

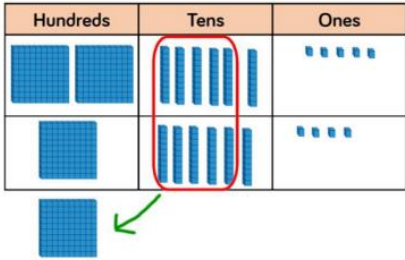
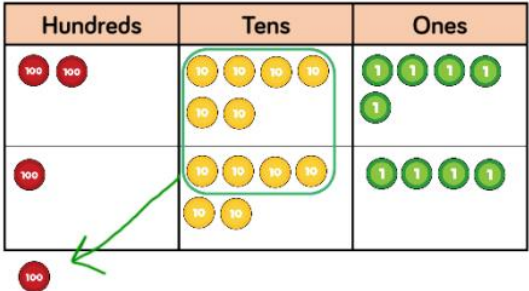
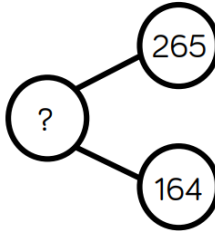
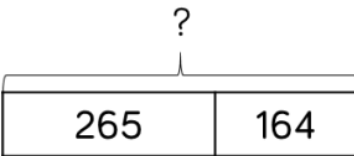
# CALCULATION GUIDANCE: Addition

	Objective	Concrete	Pictorial	Abstract
Year 1	Add 1 and 2-digit numbers to 20	  $6 + 5 = 11$  <p>Start with the bigger number and use the smaller number to make 10.</p> 	 $6 + 5 = 11$  $6 + 4 = 10$ $10 + 1 = 11$ <p style="text-align: right;">+</p>	$6 + 5 = 11$
Year 2	Add three 1-digit numbers	$4 + 7 + 6 = 17$ Put 4 and 6 together to make 10. Add on 7. 	 	 Combine the two numbers that make 10 and then add on the remainder.

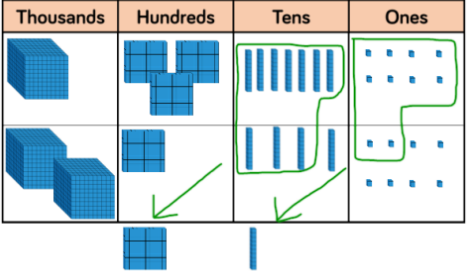
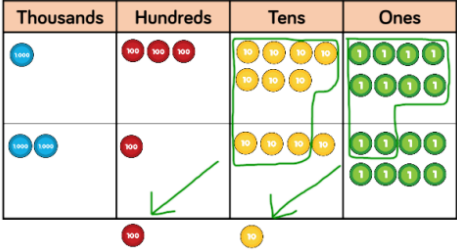
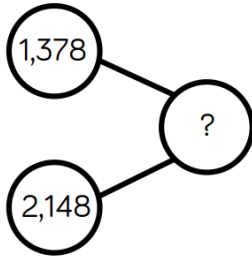
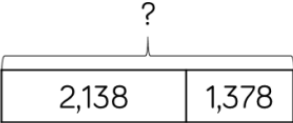
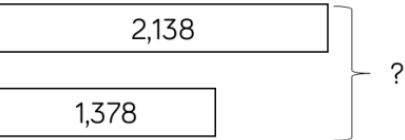
# CALCULATION GUIDANCE: Addition

	Objective	Concrete	Pictorial	Abstract
Year 2	Add 1 and 2 – digit numbers to 100.	<p>Encourage children to count on from the larger number.</p> 		$38 + 5$
	Add two 2-digit numbers to 100	 		$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ \hline 1 \end{array}$










































































































# CALCULATION GUIDANCE: Addition

	Objective	Concrete	Pictorial	Abstract
Year 3	Add with up to 3-digits	<p>Ensure children write out their calculation alongside any concrete resources.</p>  	 	$  \begin{array}{r}  265 \\  + 164 \\  \hline  429 \\  \hline  1  \end{array}  $

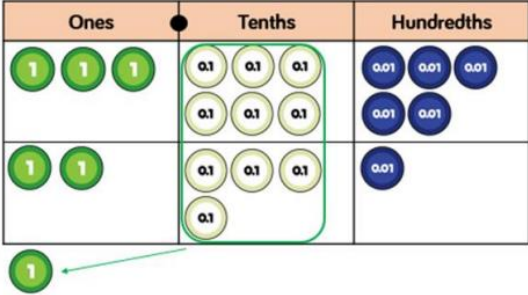
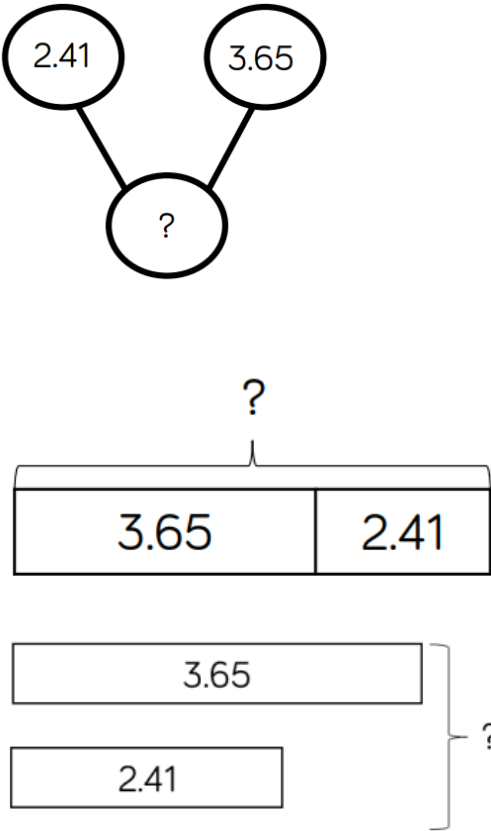
# CALCULATION GUIDANCE: Addition

Year 4	Add with up to 4-digits	 	  	<table border="1" data-bbox="1585 242 1724 414"> <tr><td></td><td>1</td><td>3</td><td>7</td><td>8</td></tr> <tr><td>+</td><td>2</td><td>1</td><td>4</td><td>8</td></tr> <tr><td></td><td>3</td><td>5</td><td>2</td><td>6</td></tr> <tr><td></td><td>1</td><td>1</td><td></td><td></td></tr> </table>		1	3	7	8	+	2	1	4	8		3	5	2	6		1	1		
	1	3	7	8																				
+	2	1	4	8																				
	3	5	2	6																				
	1	1																						

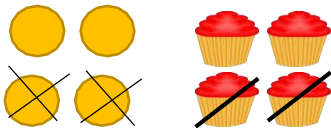
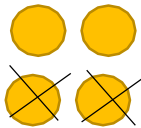

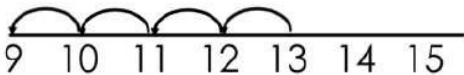
# CALCULATION GUIDANCE: Addition

Year 5	Add with more than 4 digits	<table><tr><th>HTh</th><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	HTh	TTh	Th	H	T	O				  	 	     		    		        	     		<div><div>?</div><div>104,328</div><div>61,731</div></div> <div><div>?</div><div>104,328</div><div>61,731</div></div>	<p>At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.</p> <table><tr><td>1</td><td>0</td><td>4</td><td>3</td><td>2</td><td>8</td></tr><tr><td>+</td><td>6</td><td>1</td><td>7</td><td>3</td><td>1</td></tr><tr><td>1</td><td>6</td><td>6</td><td>0</td><td>5</td><td>9</td></tr></table> <p>1</p>	1	0	4	3	2	8	+	6	1	7	3	1	1	6	6	0	5	9
HTh	TTh	Th	H	T	O																																			
			  	 	     																																			
	    		        	     																																				
1	0	4	3	2	8																																			
+	6	1	7	3	1																																			
1	6	6	0	5	9																																			

# CALCULATION GUIDANCE: Addition

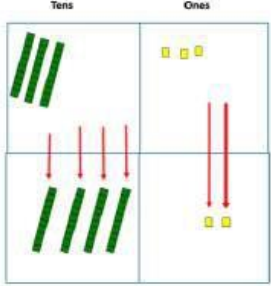
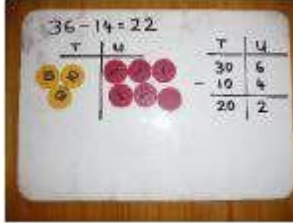
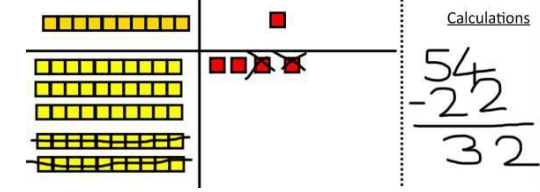
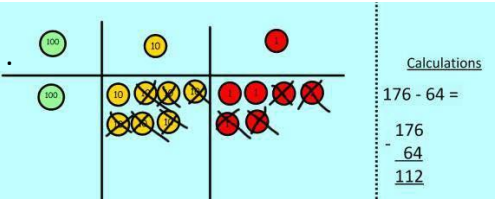
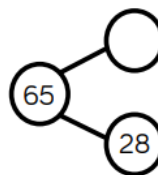
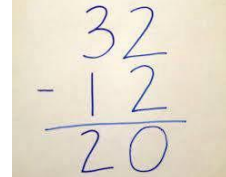
Year 5	Add with up to 3 decimal places	 <p>Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1,2 and then 3 decimal places.</p>		$\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \\ 1 \end{array}$ <p>Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.</p>
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# CALCULATION GUIDANCE: Subtraction

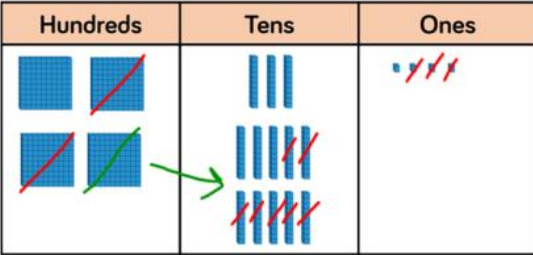
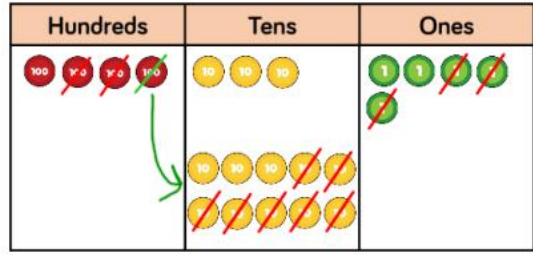
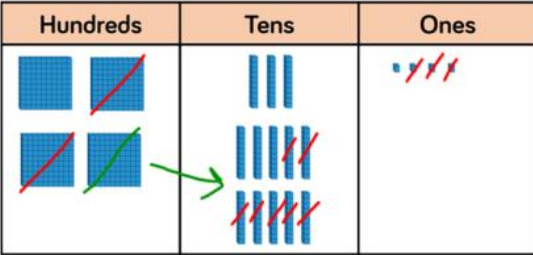
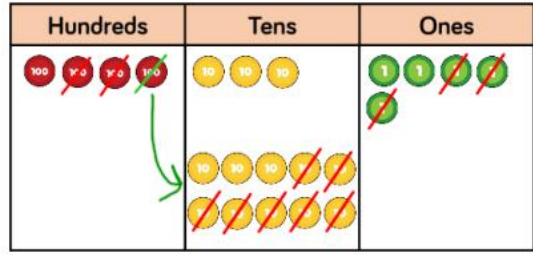
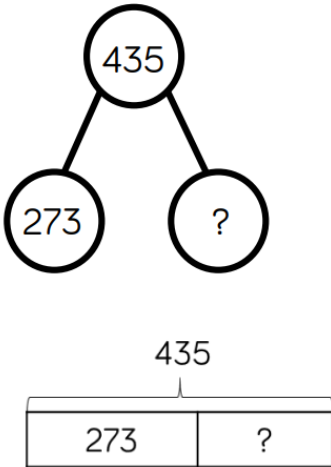
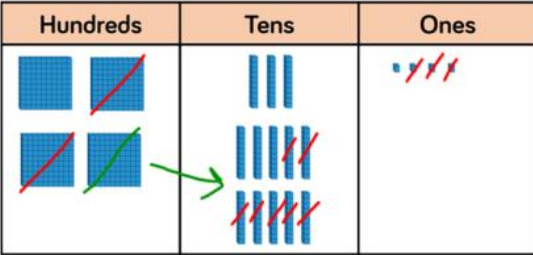
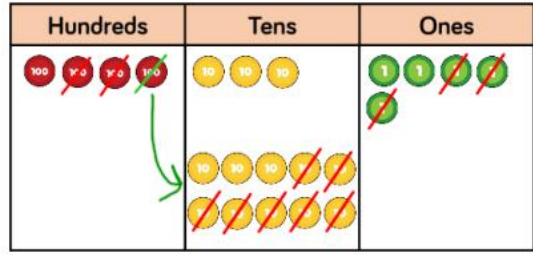
	Objective	Concrete	Pictorial	Abstract
Year 1	Subtract two 1-digit numbers to	<p>Use physical objects, counters, cubes etc. to show how objects can be taken away.</p> <p><math>4 - 2 = 2</math></p> 	<p>Cross out drawn objects to show what has been taken away.</p> <p><math>4 - 2 = 2</math></p> 	<p><math>4 - 2 = 2</math></p> <p>Hannah has 8 goldfish. Helen has 3 goldfish. Find the difference between the number of goldfish the girls have.</p>
	Subtract 1 and 2-digit numbers to 20	<p>Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.</p>  <p><math>13 - 4 = 9</math></p>	<p>Count back on a number line or number track</p>  <p>Start at the bigger number and count back the smaller number, showing the jumps on the number line.</p>	<p>Put 13 in your head, count back 4. What number are you at? Use your fingers to help.</p>



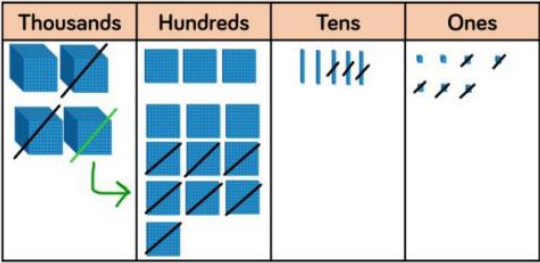
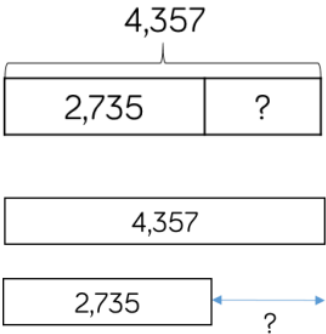
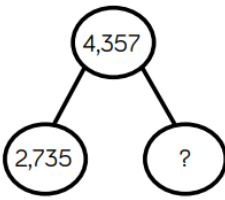
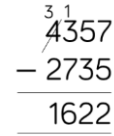
# CALCULATION GUIDANCE: Subtraction

	Objective	Concrete	Pictorial	Abstract
Year 2	Subtract 1 and 2-digit numbers to 100	<p><math>75 - 42 = 33</math></p>  <p>Use Base 10 to make the bigger number then take the smaller number away.</p> <p>Show how you partition numbers to subtract.</p> <p>Again make the larger number first.</p> 	 <p>Calculations</p> $\begin{array}{r} 54 \\ - 22 \\ \hline 32 \end{array}$  <p>Calculations</p> $\begin{array}{r} 176 \\ - 64 \\ \hline 112 \end{array}$ 	<p><math>47 - 24 = 23</math></p> $\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$ 

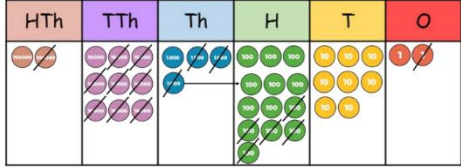
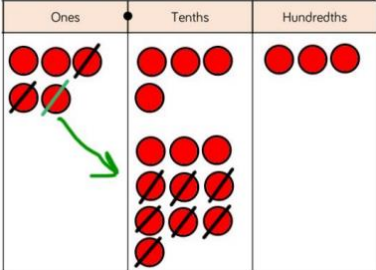

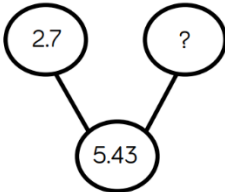
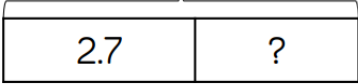
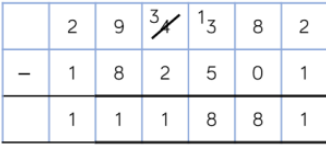
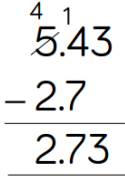
# CALCULATION GUIDANCE: Subtraction

	Objective	Concrete	Pictorial	Abstract												
Year 3	Subtract numbers with up to 3 digits.	<p>Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.</p> <table border="1"><thead><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table> <table border="1"><thead><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>	Hundreds	Tens	Ones				Hundreds	Tens	Ones					<p>Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.</p> $\begin{array}{r} \overset{3}{4}\overset{1}{3}5 \\ - 273 \\ \hline 162 \end{array}$
Hundreds	Tens	Ones														
																
Hundreds	Tens	Ones														
																

# CALCULATION GUIDANCE: Subtraction

	Objective	Concrete	Pictorial	Abstract
Year 4	Column method with regrouping	 <p>Show children how the concrete method links to the written method alongside your working.</p>	 	

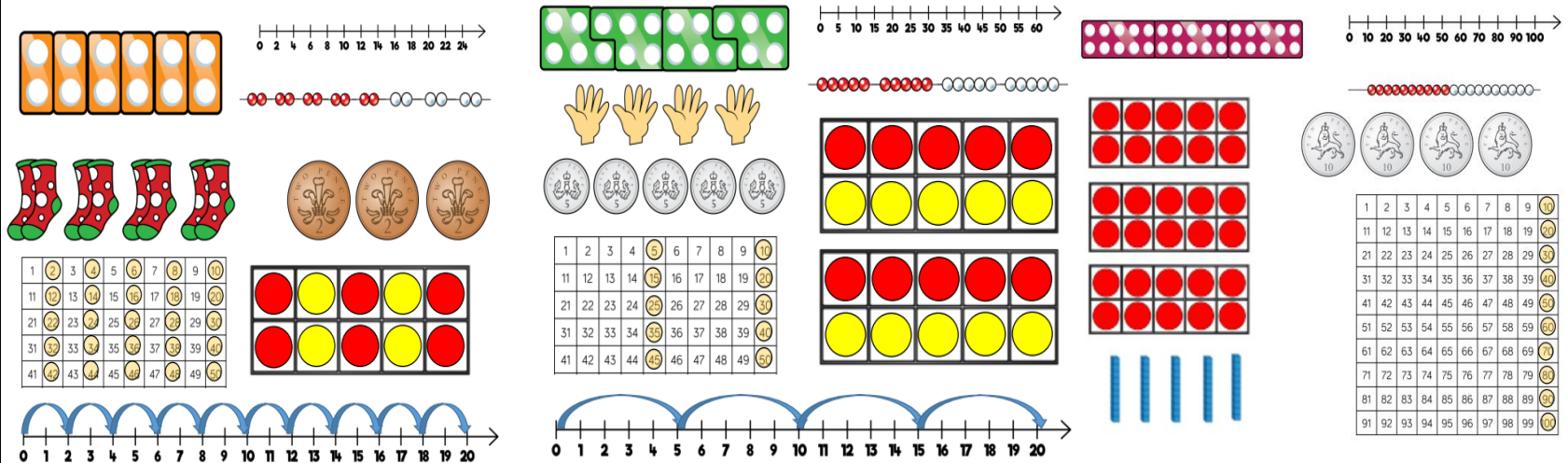
# CALCULATION GUIDANCE: Subtraction

<p>Year 5/6</p>	<p>Subtract numbers with more than 4 digits. Subtract with up to 3 decimal places.</p>	<p>Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.</p>  	<p>294,382</p>   <p>5.43</p> 	<p>At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.</p>  <p>Ensure children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money and other measures.</p> 
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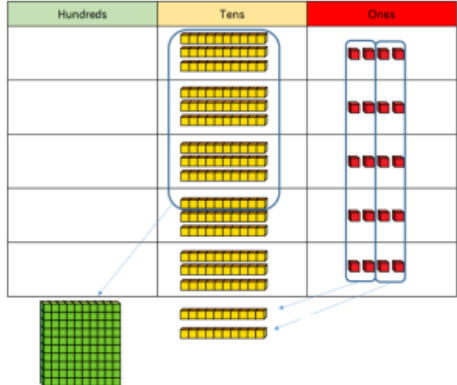

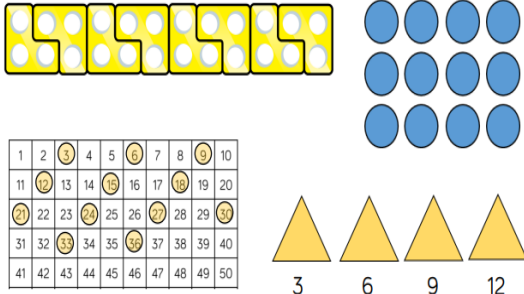
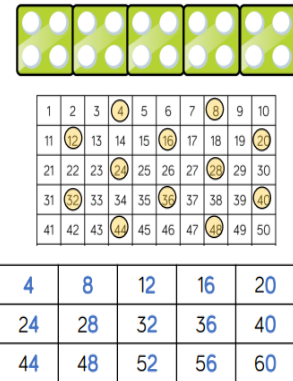
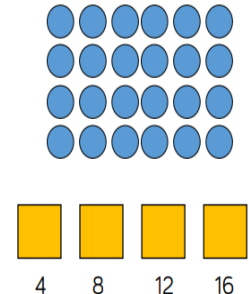
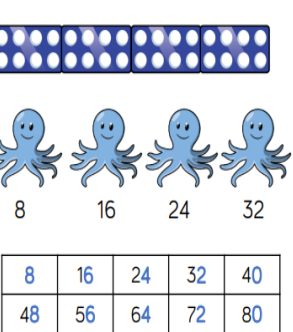
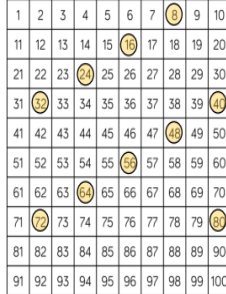
## Solve one-step problems with multiplication

$$5 + 5 + 5 + 5 = 20$$
$$4 \times 5 = 20$$
$$5 \times 4 = 20$$

Recall and use multiplication and division facts for 2- times table, 5-times table and 10 times table.



# CALCULATION GUIDANCE: Multiplication

Year 3/4	Multiply 2-digit by 1-digit numbers.	<div></div> <div></div>	<p>Informal methods and the expanded method are used in Year 3 before moving on to the short multiplication method in Year 4. Place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge.</p> <div><table><tr><td></td><td>H</td><td>T</td><td>O</td><td></td></tr><tr><td></td><td></td><td>3</td><td>4</td><td></td></tr><tr><td>×</td><td></td><td></td><td>5</td><td></td></tr><tr><td></td><td></td><td>2</td><td>0</td><td>(5 × 4)</td></tr><tr><td>+</td><td>1</td><td>5</td><td>0</td><td>(5 × 30)</td></tr><tr><td></td><td>1</td><td>7</td><td>0</td><td></td></tr></table></div> <div><table><tr><td></td><td>H</td><td>T</td><td>O</td><td></td></tr><tr><td></td><td></td><td>3</td><td>4</td><td></td></tr><tr><td>×</td><td></td><td></td><td>5</td><td></td></tr><tr><td></td><td>1</td><td>7</td><td>0</td><td></td></tr><tr><td></td><td>1</td><td>2</td><td></td><td></td></tr></table></div>		H	T	O				3	4		×			5				2	0	(5 × 4)	+	1	5	0	(5 × 30)		1	7	0			H	T	O				3	4		×			5			1	7	0			1	2		
	H	T	O																																																							
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×			5																																																							
	1	7	0																																																							
	1	2																																																								
Year 3-Times Tables	Recall and use multiplication and division facts for 3- times table, 4-times table and 8 times table.	<div><div></div><div></div><div></div><div></div><div></div></div>																																																								





# CALCULATION GUIDANCE: Multiplication

Year 4

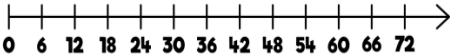

Times Tables

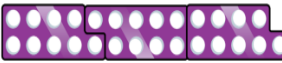
Recall and use multiplication and division facts for 6, 7, 9, 11, 12-times tables.



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

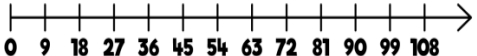

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100






9	18	27	36	45
54	63	72	81	90

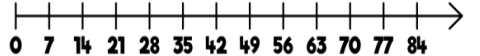

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



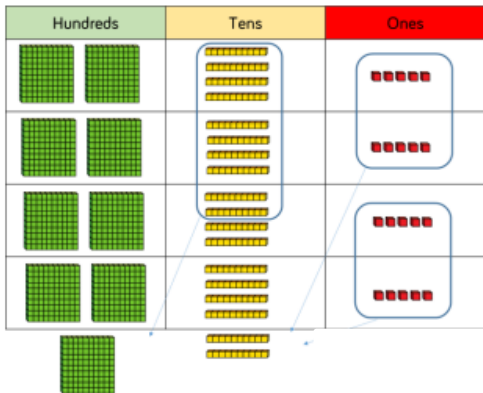


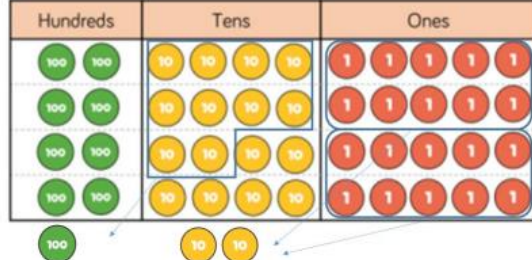
7	14	21	28	35
42	49	56	63	70

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



Multiply 3-digit by 1-digit numbers.





When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method. Base 10 and place value counters continue to support the understanding of the written method. Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.

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

# CALCULATION GUIDANCE: Multiplication

Year 5

Multiply 4-digit by 1-digit numbers. Multiply 2-digit by 2-digit numbers. Multiply 2-digit by 4-digit numbers.

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

When multiplying a multi-digit number by 2-digits, use the area model to help children understand the size of the numbers they are using. The grid method matches the area model as an initial written method before moving on to the formal written multiplication method

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

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

×	20	2
30	600	60
1	20	2

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

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

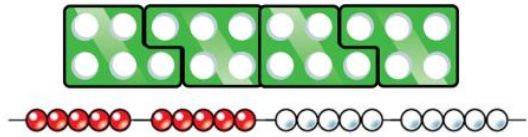
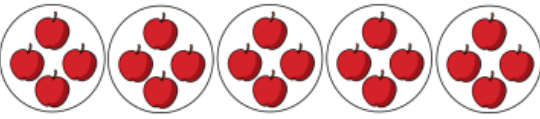
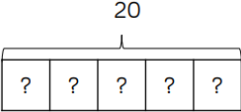
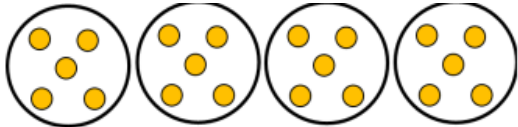
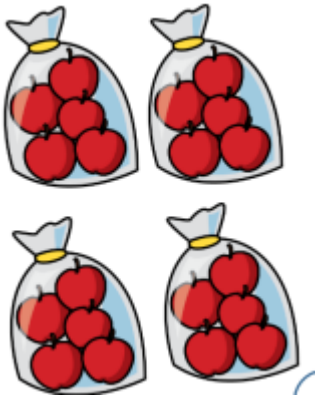
Th	H	T	O
	2	3	4
×		3	2
	4	6	8
1 7	1 0	2	0
7	4	8	8



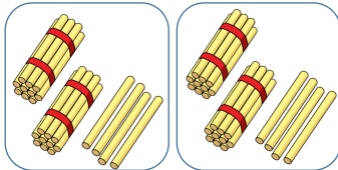
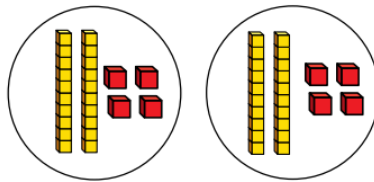




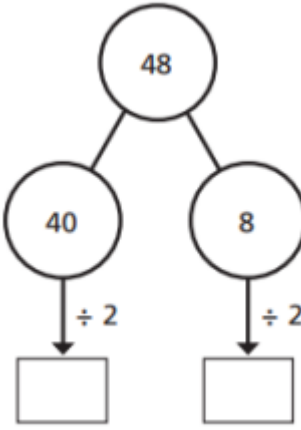








# CALCULATION GUIDANCE: Multiplication

Year 5/6	Solve one-step problems with multiplication			<p>When multiplying 4- digits by 2-digits, children should be confident in using the formal written method. If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method. Consider where exchanged digits are placed and make sure this is consistent.</p> <table border="1" data-bbox="1541 497 1780 805"> <tr> <th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr> <tr> <td></td><td>2</td><td>7</td><td>3</td><td>9</td></tr> <tr> <td>x</td><td></td><td></td><td>2</td><td>8</td></tr> <tr> <td>2 2</td><td>1 5</td><td>9 3</td><td>1 7</td><td>2</td></tr> <tr> <td>5 1</td><td>4</td><td>7 1</td><td>8</td><td>0</td></tr> <tr> <td>7</td><td>6</td><td>6</td><td>9</td><td>2</td></tr> </table>	TTh	Th	H	T	O		2	7	3	9	x			2	8	2 2	1 5	9 3	1 7	2	5 1	4	7 1	8	0	7	6	6	9	2
TTh	Th	H	T	O																														
	2	7	3	9																														
x			2	8																														
2 2	1 5	9 3	1 7	2																														
5 1	4	7 1	8	0																														
7	6	6	9	2																														


















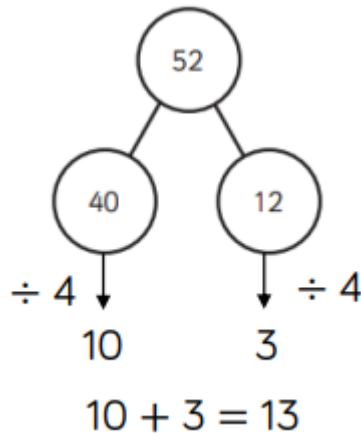








# CALCULATION GUIDANCE: Division

<p>Year 1/2</p>	<p>Solve one-step problems with division. Sharing and grouping.</p>	<p>Children solve problems by sharing amounts into equal groups. In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally. In Year 2, children are introduced to the division symbol.</p>  <p>Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division</p>	   	$20 \div 5 = 4$ <p>There are 20 apples altogether. They are put in bags of 5. How many bags are there?</p>
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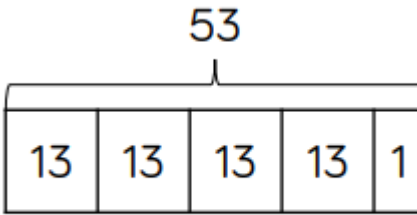
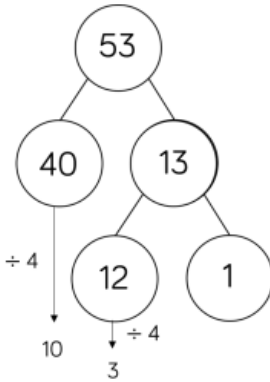
# CALCULATION GUIDANCE: Division

Year 3	Divide 2-digits by 1-digit (sharing with no exchange)	<div><div></div><div></div></div> <p>When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones. Straws, Base 10 and place value counters can all be used to share numbers into equal groups.</p>	<table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> <p>Part-whole models can provide children with a clear written method that matches the concrete representation</p> <div></div>	Tens	Ones					$48 \div 2 = 24$
Tens	Ones									
										
										

# CALCULATION GUIDANCE: Division

Year 3 - 4	Divide 2-digits by 1-digit (sharing with exchange)	<div></div> <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> <p>When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones. Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows.</p>	Tens	Ones									<div><p>52</p><table><tr><td>?</td><td>?</td><td>?</td><td>?</td></tr></table></div> <div></div> <p>Flexible partitioning in a part-whole model supports this method</p>	?	?	?	?	$52 \div 4 = 13$
Tens	Ones																	
																		
																		
																		
																		
?	?	?	?															

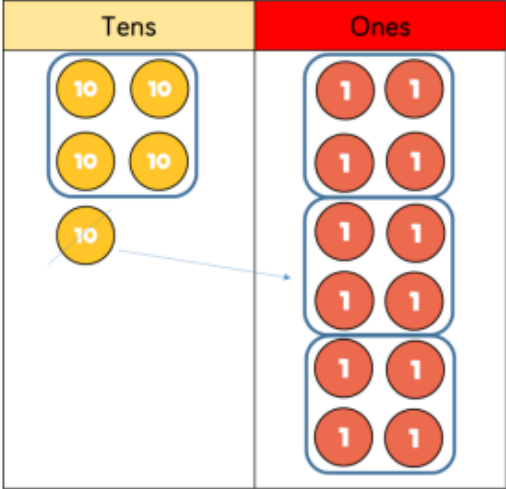
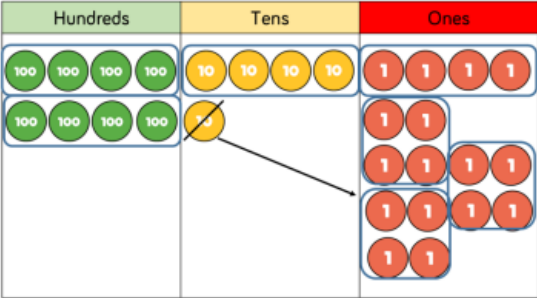
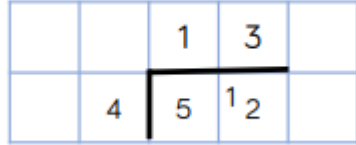
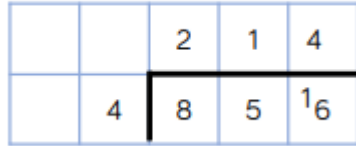
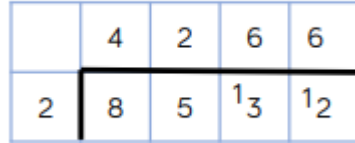
# CALCULATION GUIDANCE: Division

Year 3-4 (sharing with remainders)	Divide 2-digits by 1-digit (sharing with remainders)	 <p>When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones. Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made</p>	<p>Flexible partitioning in a part-whole model supports this method.</p>  	$53 \div 4 = 13 \text{ r}1$
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# CALCULATION GUIDANCE: Division

Year 4	Divide 3-digits by 1-digit (sharing)	<p>Children can continue to use place value counters to share 3- digit numbers into equal groups. Children should start with the equipment outside the place value grid before sharing the hundreds, tens and ones equally between the rows. This method can also help to highlight remainders.</p> <div><div><div>100100100100</div><div>100100100100</div><div>10101010</div><div>1111111111111111</div></div><table><thead><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>100100</td><td>10</td><td>1111</td></tr><tr><td>100100</td><td>10</td><td>1111</td></tr><tr><td>100100</td><td>10</td><td>1111</td></tr><tr><td>100100</td><td>10</td><td>1111</td></tr></tbody></table></div> <p>Flexible partitioning in a part-whole model supports this method.</p> <div><div>844</div><div><div>?</div><div>?</div><div>?</div><div>?</div></div><div><div>844</div><div><div>800</div><div>40</div><div>4</div></div><div><div>÷ 4</div><div>÷ 4</div><div>÷ 4</div></div><div><div></div><div></div><div></div></div></div></div> <div><math display="block">844 \div 4 = 211</math></div>	Hundreds	Tens	Ones	100100	10	1111	100100	10	1111	100100	10	1111	100100	10	1111
Hundreds	Tens	Ones															
100100	10	1111															
100100	10	1111															
100100	10	1111															
100100	10	1111															

# CALCULATION GUIDANCE: Division

Year 5	<p>Divide 2-digits by 1-digit (grouping)</p> <p>Divide 3-digits by 1-digit (grouping)</p> <p>Divide 4 digits by 1-digit (grouping)</p>	<div data-bbox="432 228 936 719">  </div> <p>Place value counters or plain counters can be used on a place value grid to support this understanding. Children can also draw their own counters and group them through a more pictorial method</p> <div data-bbox="421 949 956 1248">  </div>	<p>When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor. Language is important here. Children should consider ‘How many groups of 4 tens can we make?’ and ‘How many groups of 4 ones can we make?’ Remainders can also be seen as they are left ungrouped</p>	<div data-bbox="1563 311 1917 456">  </div> <div data-bbox="1552 521 1906 667">  </div> <div data-bbox="1559 825 1912 968">  </div>
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Year 6	Divide multi digits by 2-digits (short division)		<table><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>	15	30	45	60	75	90	105	120	135	150	<p>When children begin to divide up to 4- digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate</p>
			15	30	45	60	75	90	105	120	135	150		
<table><tr><td></td><td>0</td><td>4</td><td>8</td><td>9</td></tr><tr><td>15</td><td>7</td><td>7<sub>3</sub></td><td>13<sub>3</sub></td><td>13<sub>5</sub></td></tr></table>		0	4	8	9	15	7	7 <sub>3</sub>	13 <sub>3</sub>	13 <sub>5</sub>				
	0	4	8	9										
15	7	7 <sub>3</sub>	13 <sub>3</sub>	13 <sub>5</sub>										



# CALCULATION GUIDANCE: Division

Children can also divide by 2-digit numbers using long division. Children can write out multiples to support their calculations with larger remainders.

When a remainder is left at the end of a calculation, children can either leave it as a remainder or convert it to a fraction. This will depend on the context of the question. Children can also answer questions where the quotient needs to be rounded according to the context.

	0	4	8	9	
15	7	3	3	5	
-	6	0	0	0	( $\times 40$ )
	1	3	3	5	
-	1	2	0	0	( $\times 80$ )
		1	3	5	
-		1	3	5	( $\times 9$ )
				0	





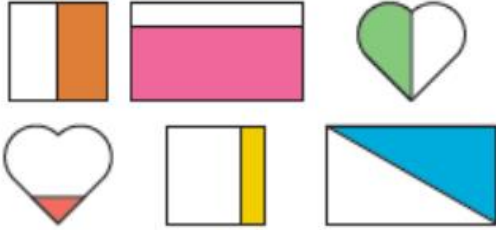
- $1 \times 15 = 15$
- $2 \times 15 = 30$
- $3 \times 15 = 45$
- $4 \times 15 = 60$
- $5 \times 15 = 75$
- $10 \times 15 = 150$

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

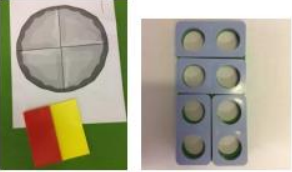





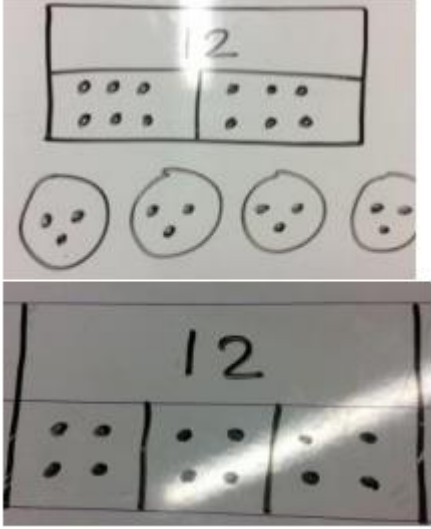
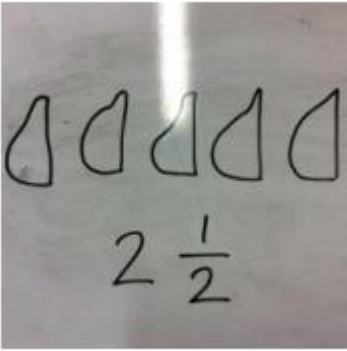
Year 6

Divide multi digits by 2-digits (long division)

# CALCULATION GUIDANCE: Fractions

<p>Year 1</p> <p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>	<p>Folding shapes into 2 equal parts</p> <p>Halving real objects such as cake, pizza</p>  <p>Emphasis that each part is equal for it to be a half, quarter</p>  <p>Sorting groups of objects into 2 equal groups</p>  	<p>Shading half, quarter of shapes</p> <p>Understanding misconceptions: Which of these show half of each whole shape? Explain your reasoning.</p> <p><i>Children should talk about the two parts needing to be equal parts of the whole.</i></p> 	<p>Word problems discussing together</p> <p>Such as</p> <p>There are 12 children in a class. Sammy says half of the class is 7. Do you agree? Explain your reasoning.</p>
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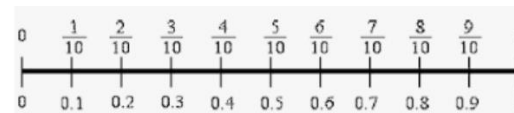
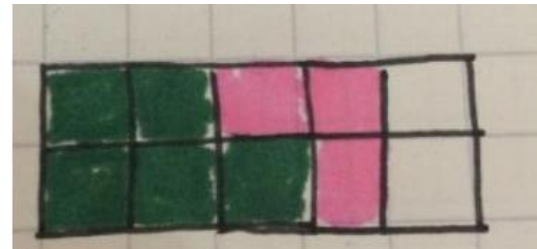
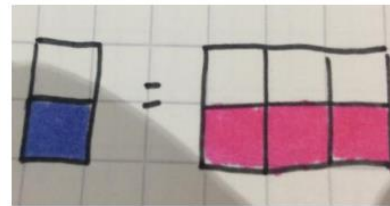
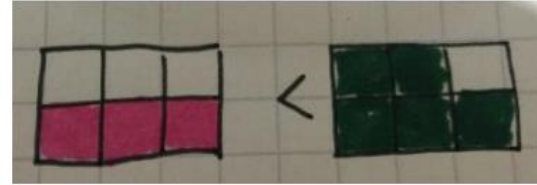
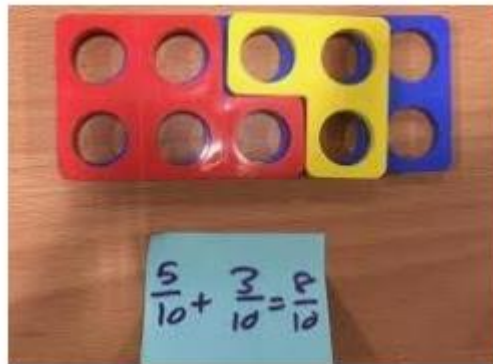
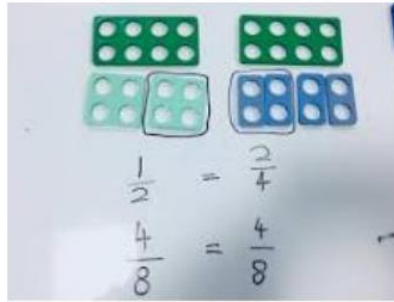
# CALCULATION GUIDANCE: Fractions

<p>Year 2</p>	<p>Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity. Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity.</p>	<p>Children split shapes into 2 or 4 equal parts</p>  <p>Children share out objects into 2, 3 or 4 equal groups</p>  <p>Children find <math>\frac{3}{4}</math> of a shape or number.</p>  <p>Understand that <math>\frac{2}{4}</math> is equivalent to <math>\frac{1}{2}</math></p>  <p>To understand whole and parts.</p>  <p>To be able to count in halves or quarters.</p> 	 	<p>2 halves make a whole 4 quarters make a whole</p> $\frac{1}{2} + \frac{1}{2} = 1$ $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$ $12 \div 2 = 6$ $2 \times 6 = 12$ $12 \div 4 = 3$ $3 \times 4 = 12$ $\frac{1}{2} \text{ of } 8 = \frac{2}{4} \text{ of } 8$ <p>2 and a half is the same as 5 <math>\frac{1}{2}</math> s</p>
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# CALCULATION GUIDANCE: Fractions

Year 3

Recognise and show, using diagrams, equivalent fractions with small denominators.  
Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Add and subtract fractions with the same denominator within one whole (for example,  $5/7 + 1/7 = 6/7$ ). Compare and order unit fractions, and fractions with the same denominator. Count up and down in tenths;



$2/4$  or  $1/2$  the children have blond hair

Continue fraction chains:  $1/4 = 2/8 = 3/12$

Write these fractions in the correct order  $2/6$   
 $1/6$   $4/6$

$5/10 + 3/10 = 8/10$

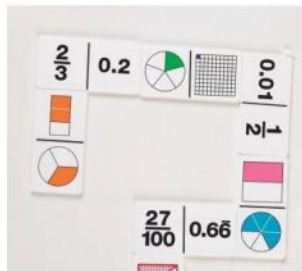
$2/10 = 0.2$   $7/10 = 0.7$

# CALCULATION GUIDANCE: Fractions

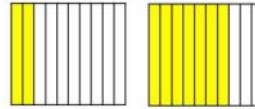
Year 4

Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to  $\frac{1}{4}$ ;  $\frac{1}{2}$ ;  $\frac{3}{4}$ . Find the effect of dividing a one or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths • round decimals with one decimal place to the nearest whole number. Compare numbers with the same number of decimal places up to two decimal places

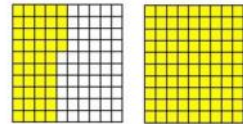
Place value slider:



$$1 \div 10 = 1/10$$

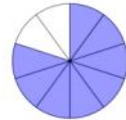


$$1 \div 100 = 1/100$$

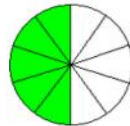


$$97/100 = 0.97$$

Decimal equivalents



$$8/10 = 0.8$$



$$\frac{1}{2} = 5/10 = 0.5$$

Copy and complete:

$$7/10 = ?/100$$

Start at  $73/100$ , count back 5 hundredths.

Round to the nearest whole one:  
5.3 12.9 151.4

Round to the nearest pound:  
£2.80 £36.10 £165.40

Approximate by rounding to the nearest whole one:  
 $24.3 + 8.5$   $6.8 \times 9.1$

$$5.42 > 5.27$$

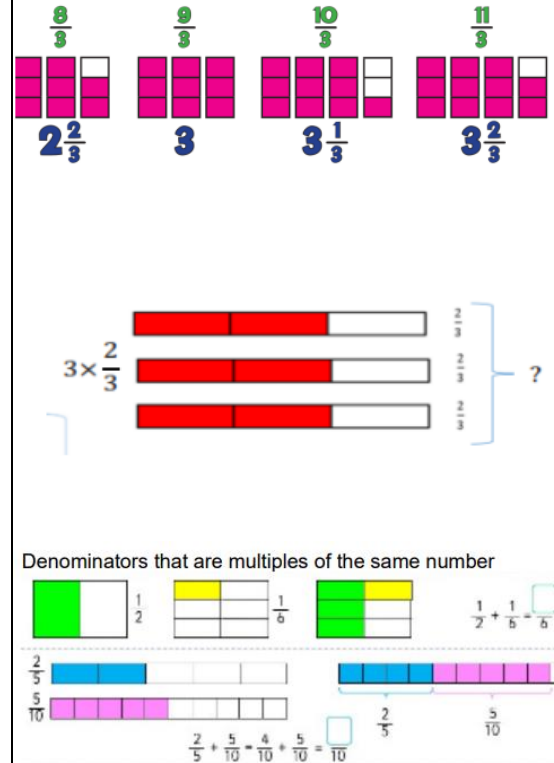
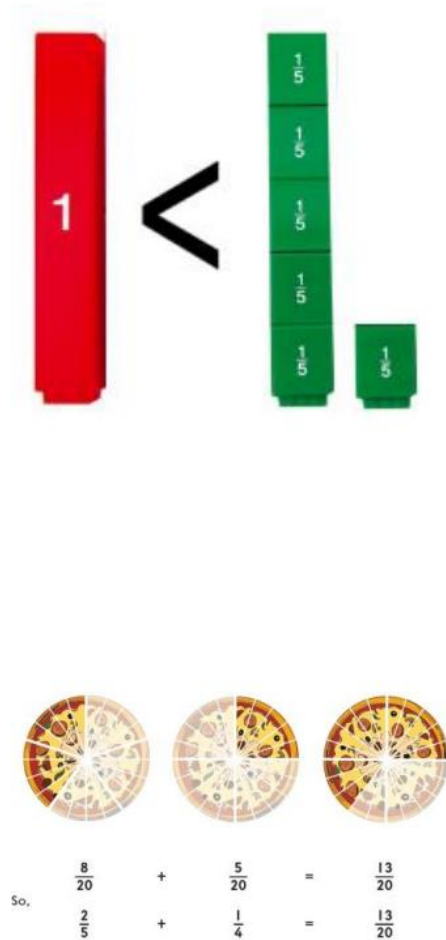
Order these decimals:  
4.0 4.4 3.3 3.4 4.3  
8.17 7.88 7.78 8.07 7.77



# CALCULATION GUIDANCE: Fractions

## Year 5

Compare and order fractions whose denominators are all multiples of the same number. Recognise mixed numbers and improper fractions. Convert from one form to the other and write mathematical statements  $>1$  as a mixed number. Add and subtract fractions with the same denominators and denominators that are multiples of the same numbers. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Recognise the % sign.



$$\frac{7}{2} = 3\frac{1}{2}$$

because  $7 \div 2 = 3$  with 1 half left over

$$2\frac{1}{3} = \frac{7}{3}$$

because  $2 \times 3 = 6$  with 1 third left to add

$$\frac{2}{5} - \frac{1}{4}$$

So,

$$\frac{2}{5} = \frac{8}{20}$$

$$\frac{1}{4} = \frac{5}{20}$$

$$\frac{8}{20} - \frac{5}{20} = \frac{3}{20}$$

$$\frac{2}{5} - \frac{1}{4} = \frac{3}{20}$$

$$\frac{3}{4} \times 6 = \frac{18}{4}$$

Change to a mixed number:

$$\frac{18}{4} = 4\frac{2}{4}$$

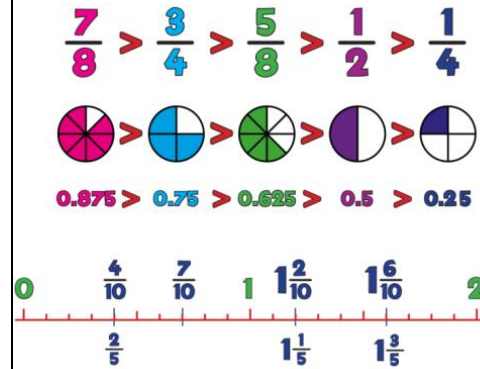
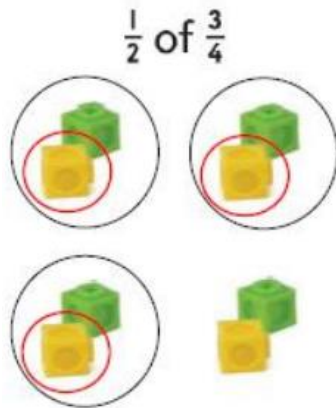
$$\frac{4}{10} = 40\% = 0.4$$

$$\frac{32}{100} = 32\% = 0.32$$

# CALCULATION GUIDANCE: Fractions

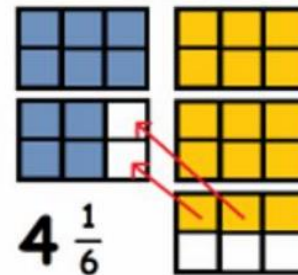
Year 6

Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form. Divide proper fractions by whole numbers. Recall and use equivalences between simple fractions, decimals and percentages including in different contexts



$$1\frac{2}{3} + 2\frac{1}{2}$$

Use denominators to draw grids (in this case 2 x 3) that represent units.



$$4\frac{1}{6}$$

$$1\frac{1}{2} + \frac{1}{3} = 1\frac{5}{6}$$

$$\text{because } 1\frac{1}{2} = \frac{3}{2}$$

$$\frac{3}{2} = \frac{9}{6} \text{ and } \frac{1}{3} = \frac{2}{6}$$

$$\text{so } \frac{9}{6} + \frac{2}{6} = \frac{11}{6} = 1\frac{5}{6}$$

$$\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$$

$$\frac{1}{2} \div 3 = \frac{1}{6}$$

$$\frac{3}{8}$$

3 'out of' 8 is the same as 3 'divided by' 8

$$3 \div 8 = 0.375$$

$$\text{So } \frac{3}{8} = 0.375$$