



**William Hulme's Grammar School**

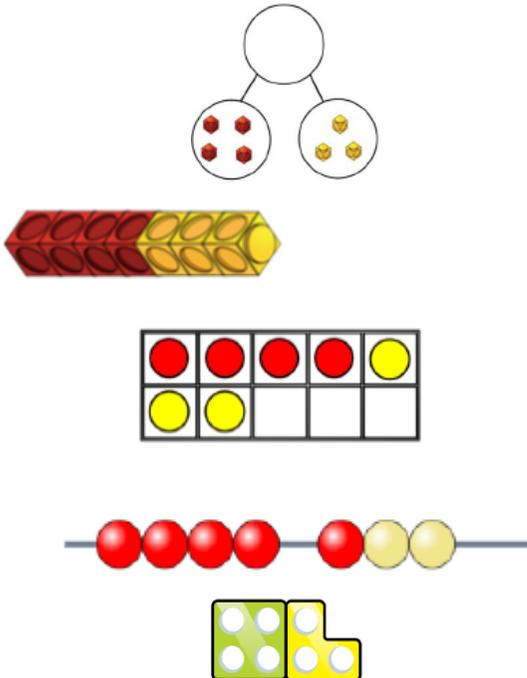
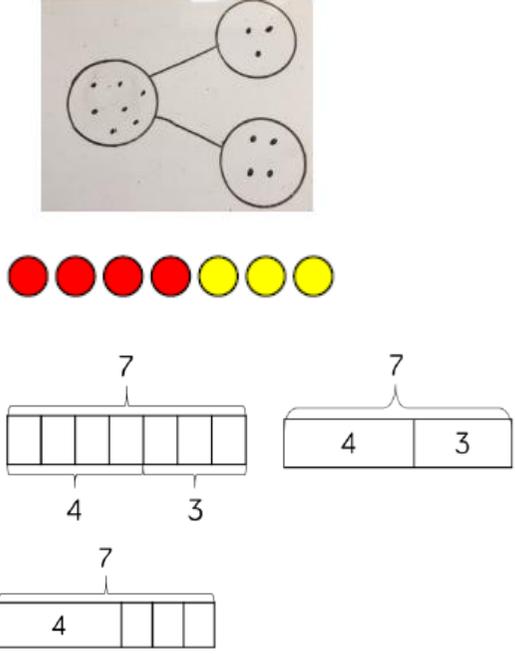
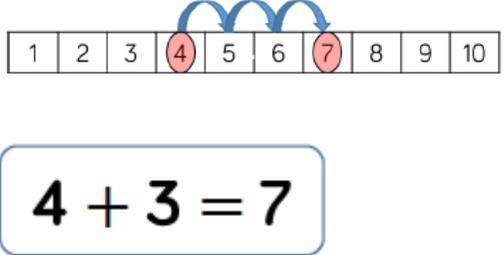
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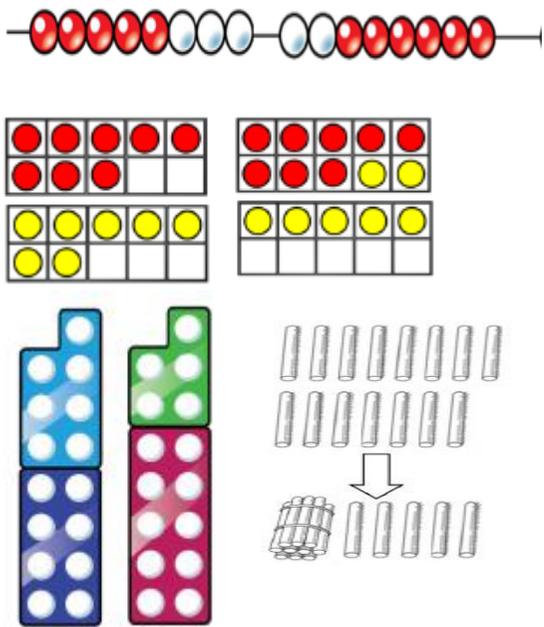
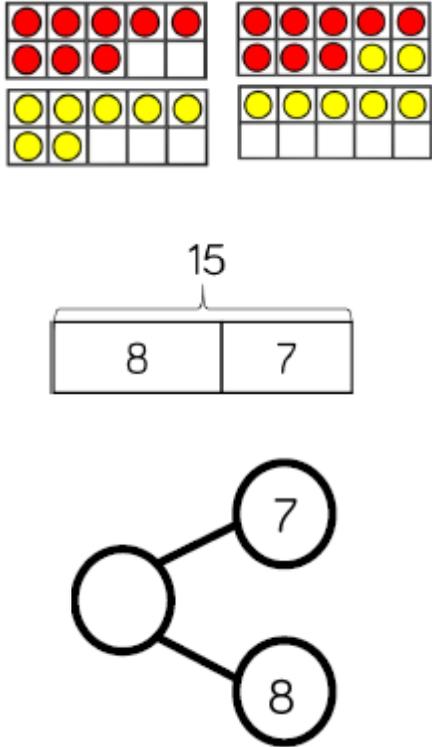
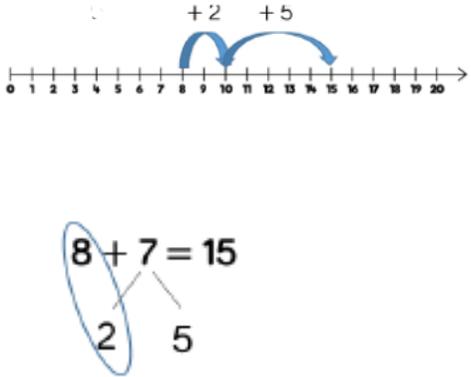
# **Maths Calculation Policy**

# Addition

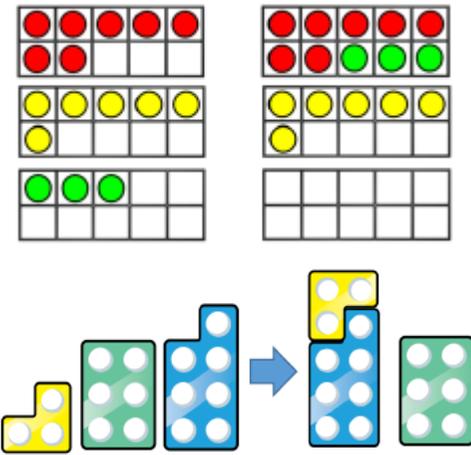
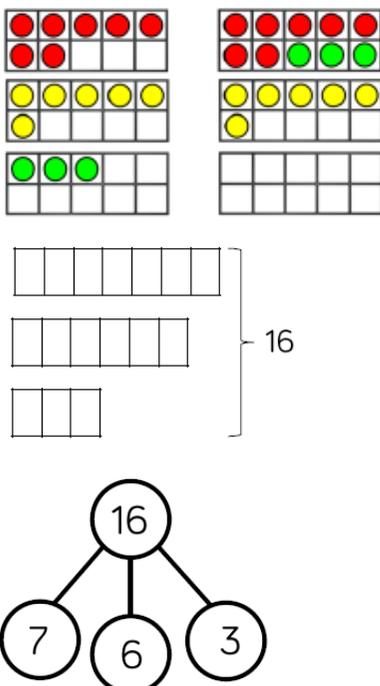
## Year 1: Adding 1-digit numbers within 10

Concrete	Pictorial	Abstract
<p>Use cubes, ten frames, bead strings, numicon and other concrete resources to show adding two 1-digit numbers. Children can explore augmentation (increase one quantity by another) and aggregation (combining 2 sets).</p> 	<p>Draw part-whole model with dots, draw counters or use different bar models.</p> 	<p>Use number lines to show addition. Children can also use the addition sign.</p> 

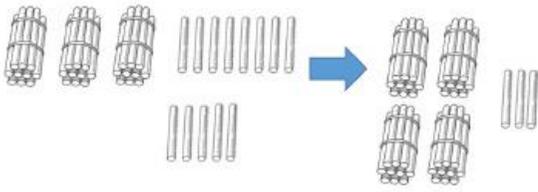
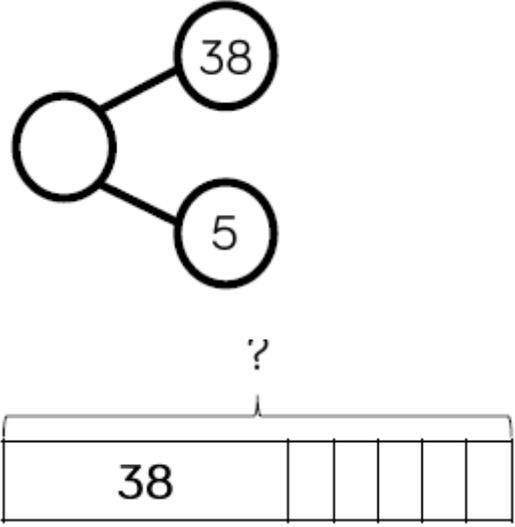
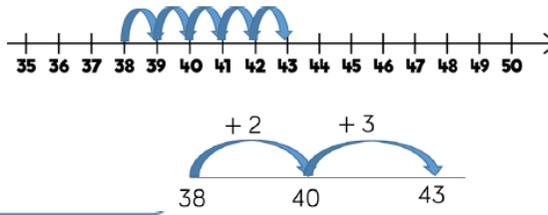
# Year 1/2: Add 1 and 2-digit numbers up to 20

Concrete	Pictorial	Abstract
<p>Use different concrete resources such as bead strings, numicon, straws and ten frames to show addition. When crossing ten, highlight that 10 ones becomes 1 ten.</p> 	<p>Children can draw counters on tens frames or use part-whole and bar models to show addition.</p> 	<p>Children can use number lines to show addition. Children should use number bonds to 10 to show 2 jumps rather than jumping in ones.</p> 

# Year 2: Add 3 one-digit numbers

Concrete	Pictorial	Abstract
<p>Use numicon, ten frames with cubes to make 10 then add on remaining numbers.</p>  <p>The concrete section shows two methods. The first uses ten frames: a 2x5 frame with 7 red cubes, a 2x5 frame with 6 green cubes, and a 1x3 frame with 3 yellow cubes. The second uses numicon blocks: a yellow block (1), a green block (6), and a blue block (9), which are combined to form a blue block (10), a green block (6), and a yellow block (1).</p>	<p>Children can draw 10s frames and use bar model to show addition. Use part-whole model to show how 3 numbers makes a whole.</p>  <p>The pictorial section shows two methods. The first uses ten frames: a 2x5 frame with 7 red cubes, a 2x5 frame with 6 green cubes, and a 1x3 frame with 3 yellow cubes. The second uses a bar model with three bars of lengths 7, 6, and 3, and a part-whole model with a circle containing 16 and three smaller circles containing 7, 6, and 3.</p>	<p>Children use number bonds to make 10 then add remaining number.</p> $7 + 6 + 3 = 16$  <p>A number bond diagram shows a large 'V' shape with 10 at the bottom vertex, and lines connecting it to the 7 and 6 in the equation above.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <math display="block">7 + 6 + 3 = 16</math> </div>

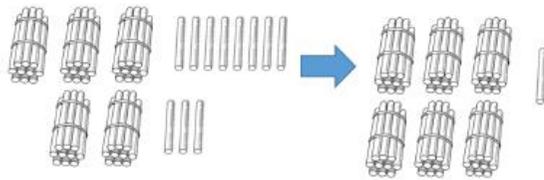
# Year 2: Add 1-digit and 2-digit numbers up to 100

Concrete	Pictorial	Abstract																																																																																																				
<p>Use concrete objects such as straws to show tens and ones. Where crossing 10, make a new group of 10</p> 	<p>Represent addition using part-whole model or bar model</p> 	<p>Use number lines/ number square to show counting on in 1s and using number bonds to 10 to jump to the next 10 then add the remainder</p>  <table border="1" data-bbox="1456 837 1892 1268"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr> <tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr> <tr><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td></tr> <tr><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td></tr> <tr><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td></tr> </table>	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
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# Year 2: Add two 2-digit numbers up to 100

## Concrete

Children can use concrete resources to show addition. Exchange 10 ones to 1 ten. Use place value charts with base 10 or counters to show exchanging 10 ones for 1 ten.



Tens	Ones
	.....
	.....

A place value chart with 3 tens and 13 ones. A red circle highlights 10 ones, and a green arrow points to the tens column, indicating the exchange process.

Tens	Ones
●●●	●●●●●●●●
●●	●●●

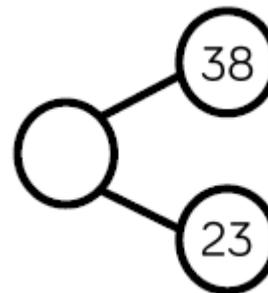
A place value chart with 4 tens and 3 ones, showing the result after the exchange. A green arrow points from the 10 ones in the previous chart to the new ten.

## Pictorial

Children to draw place value counters/base 10 on a place value chart. Part-whole and bar models can also be used to show the addition.

Tens	Ones
●●●	●●●●
●●	●●●

A pictorial place value chart for 38 + 23. It shows 3 tens and 13 ones. A green circle highlights 10 ones, and a green arrow points to the tens column, indicating the exchange.



?	
38	23

A bar model with a box divided into two sections. The left section contains the number 38 and the right section contains the number 23. A question mark is written above the entire bar.

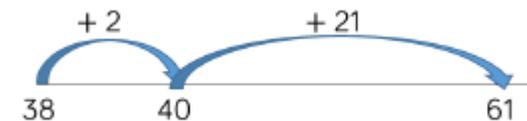
## Abstract

Children can use formal, written method with exchange. Children can also show the addition using a number line using number bonds to 10 when crossing 10.

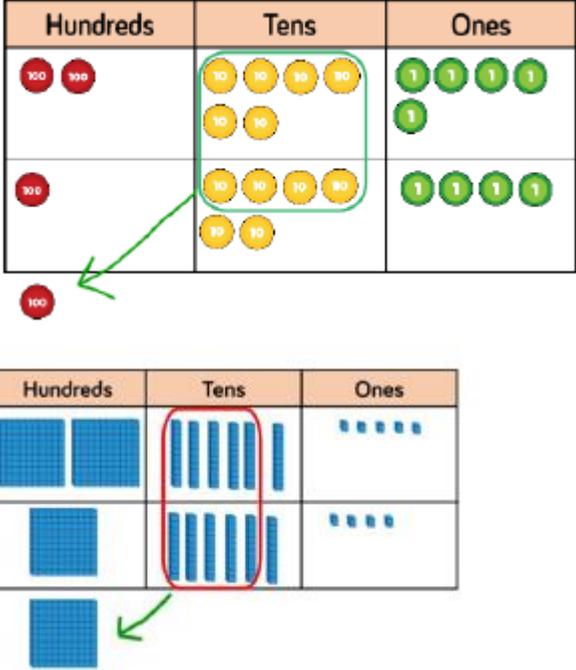
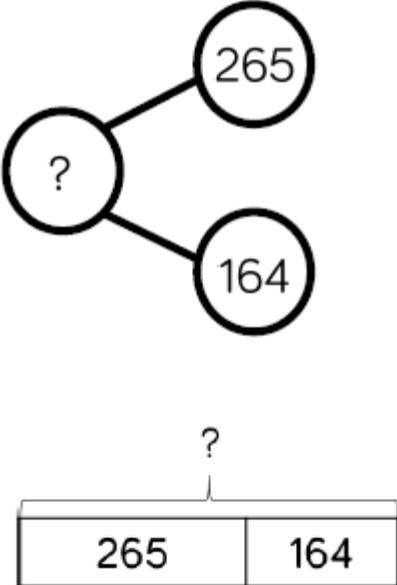
$$38 + 23 = 61$$

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

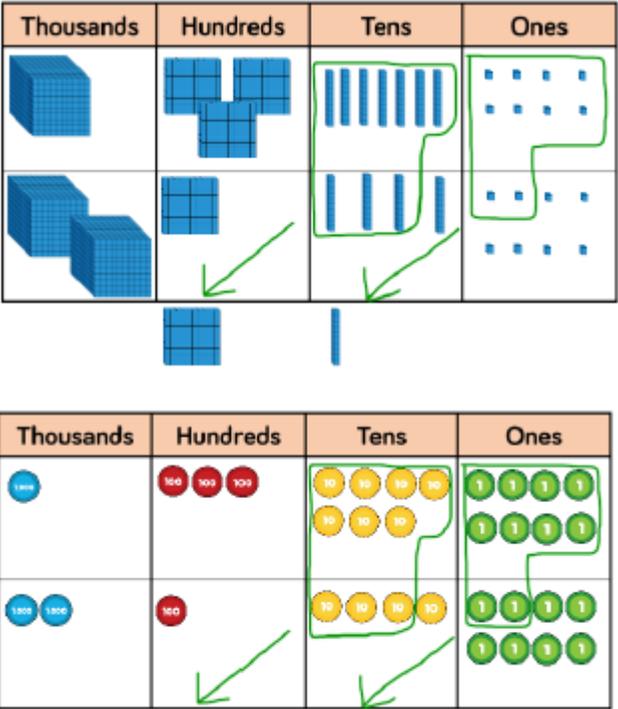
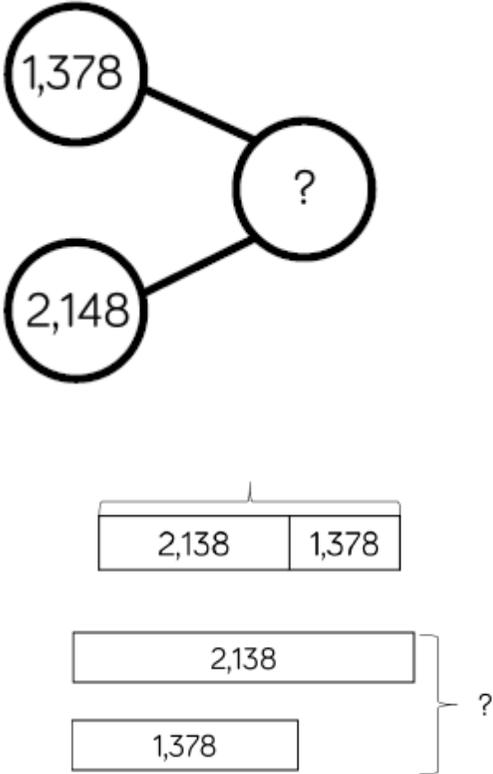
A formal written method for the addition of 38 and 23, showing the result 61 and a carry of 1.



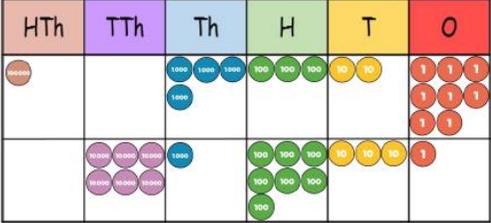
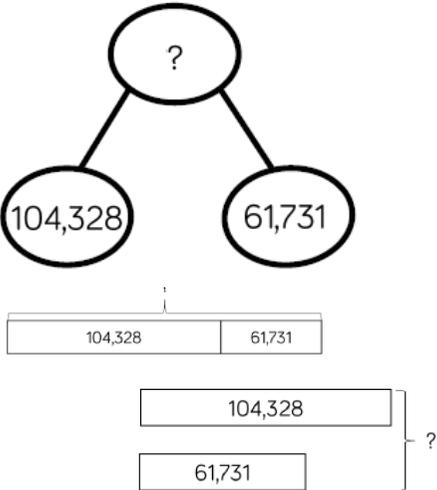
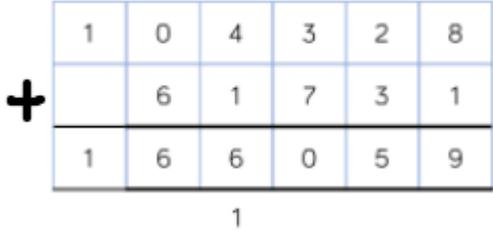
# Year 3: Add numbers with up to 3 digits

Concrete	Pictorial	Abstract
<p>Use place value counters or base 10 on a place value chart to show addition including any exchanges.</p> 	<p>Use part whole and bar models to represent additions and show how to add the ones, tens and hundreds.</p> 	<p>Children can now use the formal written method.</p> $  \begin{array}{r}  265 \\  + 164 \\  \hline  429 \\  \hline  1  \end{array}  $

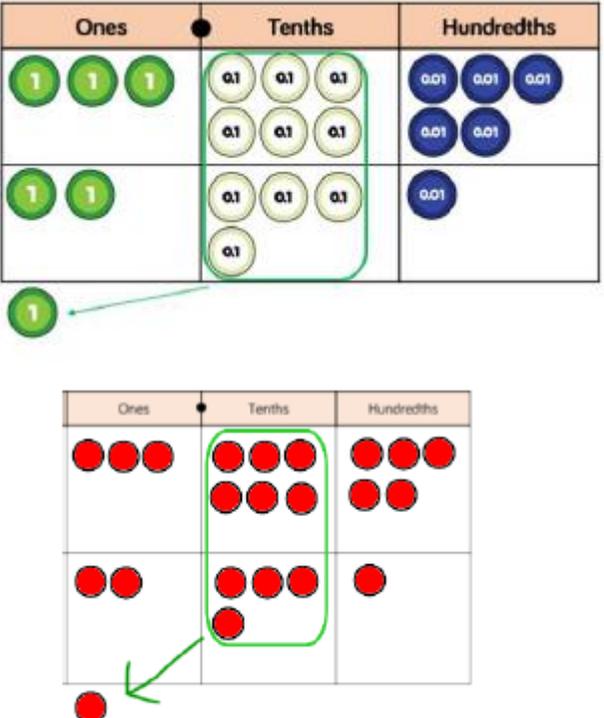
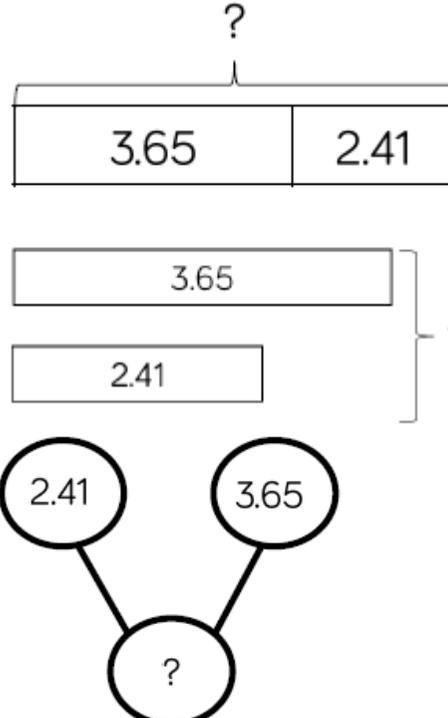
# Year 4: Add numbers with up to 4 digits

Concrete	Pictorial	Abstract
<p>Use place value counters or base 10 on a place value chart to show addition including any exchanges.</p> 	<p>Use part whole and bar models to represent additions and show how to add the ones, tens, hundreds, thousands.</p> 	<p>Children can now use the formal written method.</p> 

# Year 5/6: Add numbers with more than 4 digits

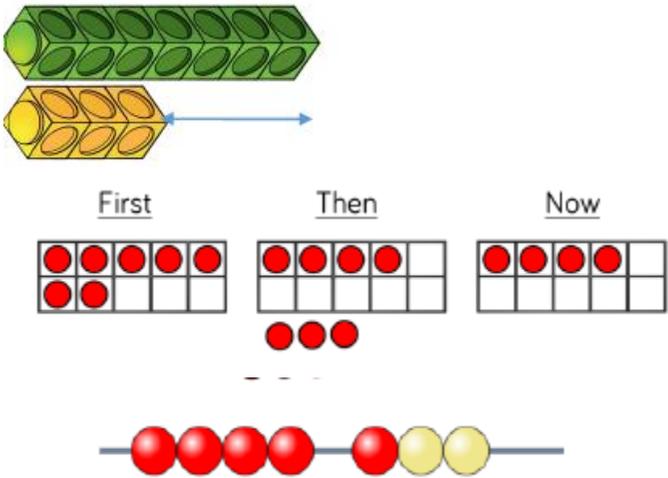
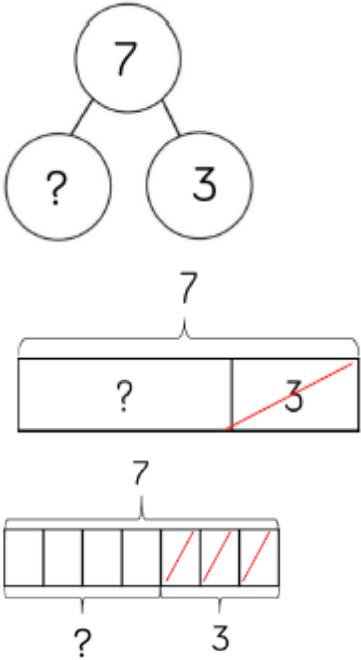
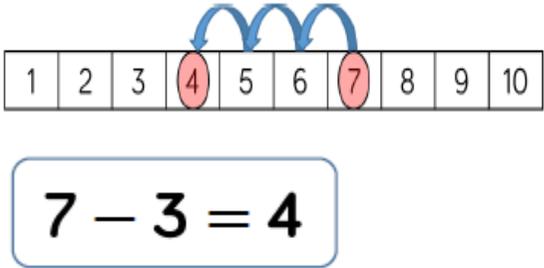
Concrete	Pictorial	Abstract
<p>Use place value counters or base 10 on a place value chart to show addition including any exchanges.</p> 	<p>Use part whole and bar models to represent additions and show how to add the ones, tens, hundreds, thousands.</p> 	<p>Children can now use the formal written method.</p> 

# Year 5: Add with up to 3 decimal places

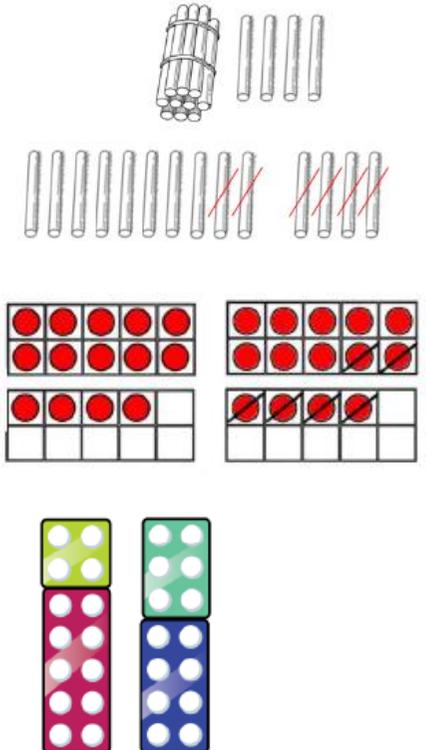
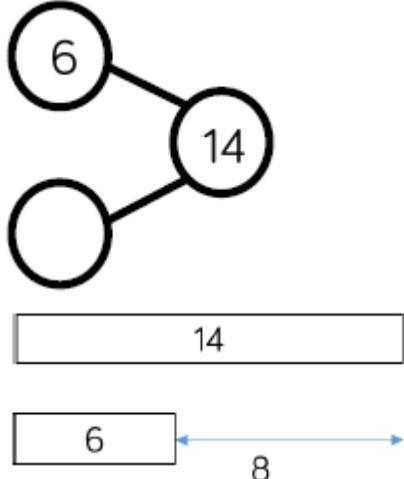
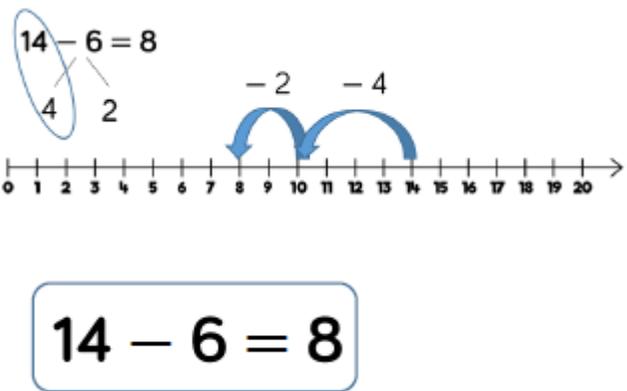
Concrete	Pictorial	Abstract
<p>Use place value counters or normal counters on a place value chart to show addition including any exchanges.</p> 	<p>Use part whole and bar models to represent additions and show how to add the ones, tenths, hundredths, thousandths.</p> 	<p>Children can now use the formal written method.</p> $  \begin{array}{r}  3.65 \\  + 2.41 \\  \hline  6.06 \\  1  \end{array}  $

# Subtraction

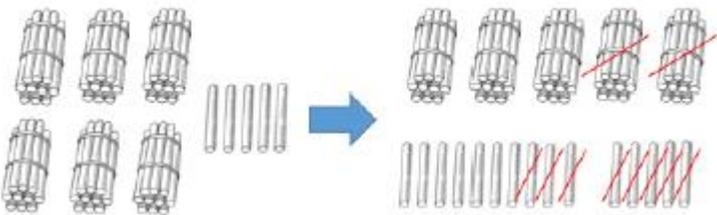
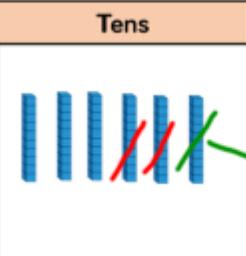
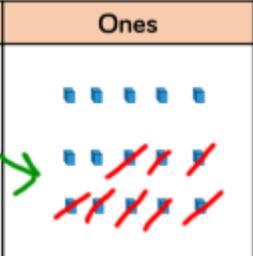
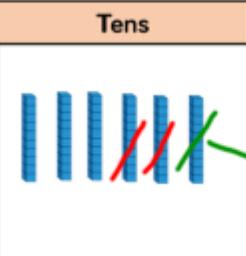
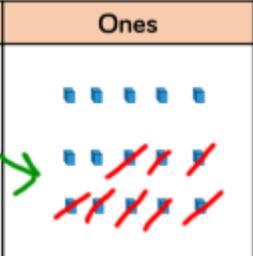
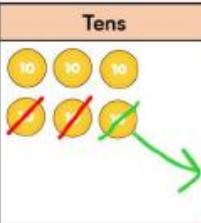
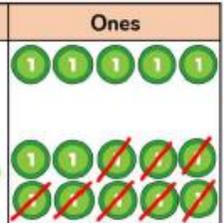
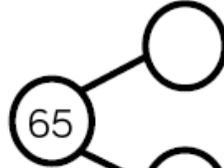
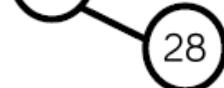
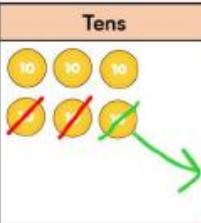
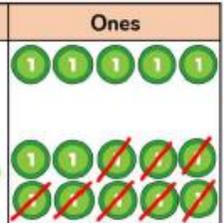
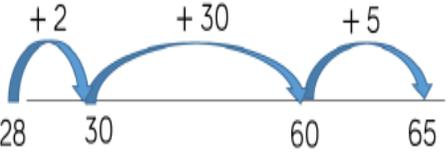
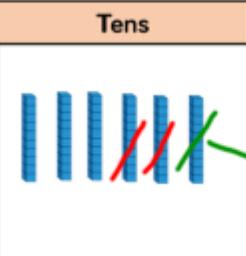
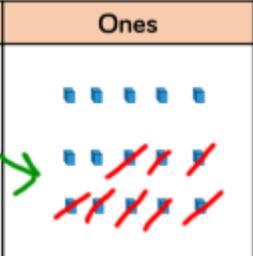
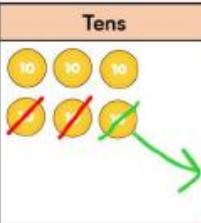
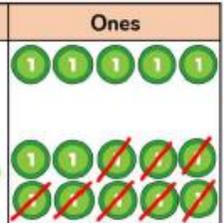
## Year 1: Subtract 1-digit numbers within 10

Concrete	Pictorial	Abstract
<p>Use cubes, 10 frames, beads to create a number then remove some, then find out how many are left Introduce the idea of finding the difference.</p>  <p>The concrete section illustrates subtraction using physical objects. At the top, there are two rows of cubes: a top row of 7 green cubes and a bottom row of 3 yellow cubes. An arrow points from the yellow cubes to the right. Below this, three 10-frames are shown. The first frame, labeled 'First', has 7 red beads. The second frame, labeled 'Then', has 4 red beads and 3 red beads below it. The third frame, labeled 'Now', has 4 red beads. Below the 10-frames is a string of 7 beads: 4 red and 3 yellow.</p>	<p>Use part-whole model or different bar models to represent what is done with objects.</p>  <p>The pictorial section shows two models. The first is a part-whole model with a top circle containing '7' and two bottom circles containing '?' and '3'. Below it is a bar model with a bracket above it labeled '7'. The bar is divided into two sections: the left section contains '?' and the right section contains '3' with a diagonal red line through it. The second model is another bar model with a bracket above it labeled '7'. The bar is divided into two sections: the left section contains '?' and the right section contains '3' with three diagonal red lines through it.</p>	<p>A number track or number line can be used to show jumps. Encourage children to use an empty number line. Calculation can also be written using subtraction sign.</p>  <p>The abstract section features a number track from 1 to 10. The numbers 4 and 7 are circled in red. Three blue curved arrows show a jump from 7 to 6, 6 to 5, and 5 to 4. Below the number track is a rounded rectangle containing the equation <math>7 - 3 = 4</math>.</p>

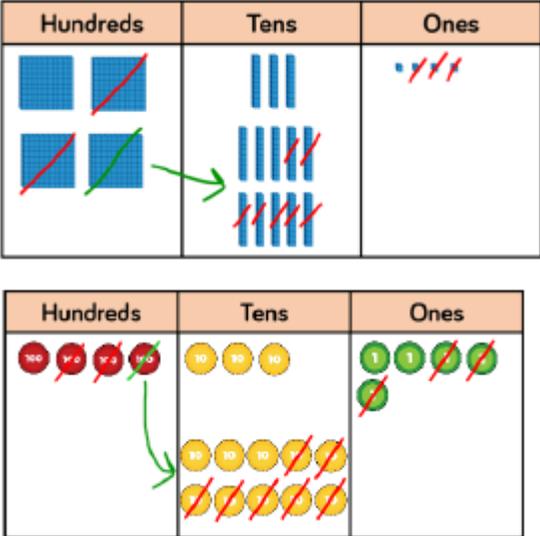
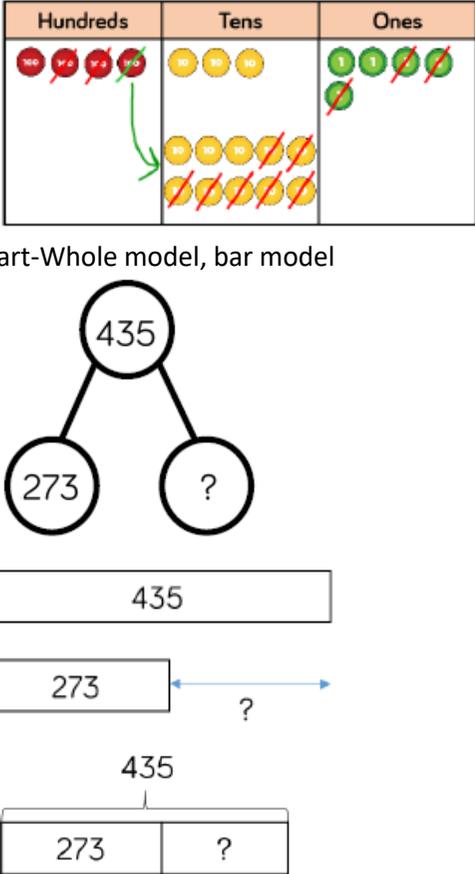
# Year 1/2: Subtract 1- and 2-digit numbers up to 20

Concrete	Pictorial	Abstract
<p>Use concrete objects to physically take away and remove objects from the whole. When Crossing 10, make it clear that 1 ten is the same as 10 ones.</p> 	<p>Use part-whole model or different bar models to represent what is done with objects.</p> 	<p>Children can show counting back on a number line—firstly in 1s, then partition the number to cross 10.</p> 

# Year 2: Subtract 1- and 2-digit numbers up to 100

Concrete	Pictorial	Abstract										
<p>This can be done using straws, base 10 apparatus. When teaching exchange- it is important that children exchange 1 ten for ten 1s. A place value chart can also be used.</p>  <table border="1" data-bbox="235 853 734 1117"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Tens	Ones			<p>Draw base 10 or place value counters on a place value grid to show exchange. Part-whole or bar model can also be used.</p> <table border="1" data-bbox="1019 582 1444 805"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>   <p style="text-align: center;">65</p> <table border="1" data-bbox="996 1141 1355 1228"> <tr> <td style="width: 50px; height: 50px; text-align: center;">?</td> <td style="width: 50px; height: 50px; text-align: center;">28</td> </tr> </table>	Tens	Ones			?	28	<p>Children can now use formal, written method. Subtraction can also be shown by counting up on a number line to find the difference.</p> $  \begin{array}{r}  \overset{5}{\cancel{6}}\overset{1}{5} \\  - 28 \\  \hline  37  \end{array}  $ 
Tens	Ones											
												
Tens	Ones											
												
?	28											

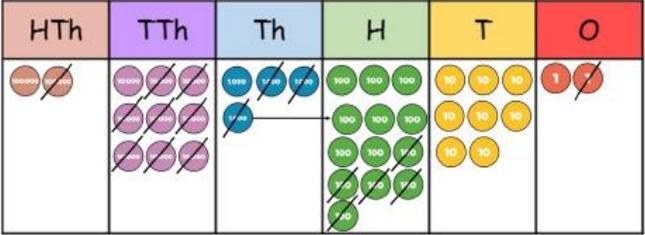
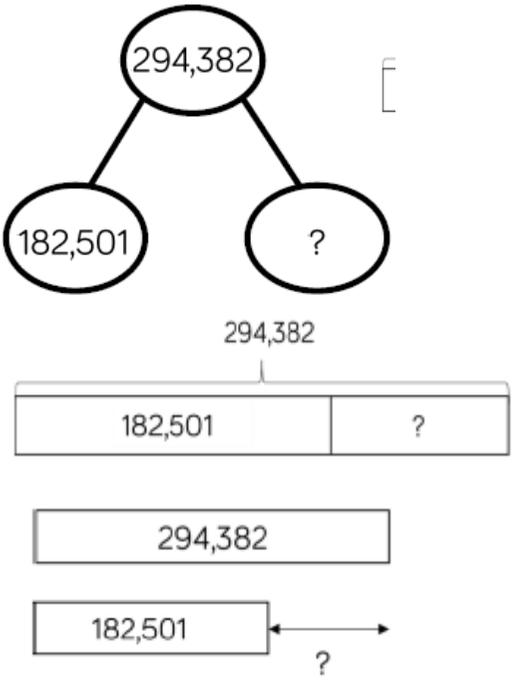
# Year 3: Subtract numbers with up to 3 digits

Concrete	Pictorial	Abstract
<p>Use base 10 or place value counters on a place value chart to show the subtraction as well as any exchanges.</p> 	<p>Represent place value counters or base 10 pictorially.</p> 	<p>Children can now use formal, written method.</p> $  \begin{array}{r}  \phantom{0}^3 \phantom{0}^1 \\  435 \\  - 273 \\  \hline  262  \end{array}  $

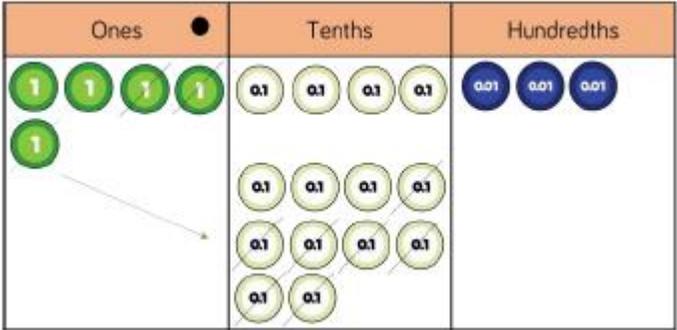
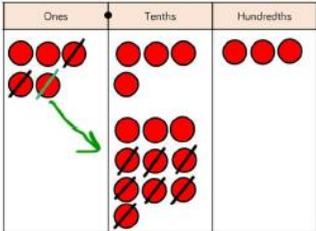
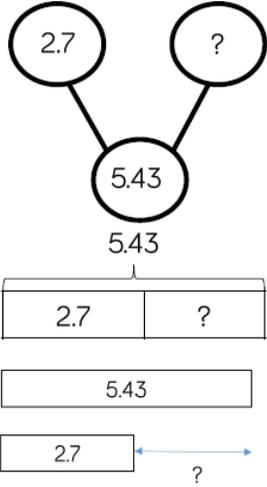
# Year 4: Subtract numbers with up to 4 digits

Concrete	Pictorial	Abstract																																					
<p>Use base 10 or place value counters on a place value chart to show the subtraction</p> <table border="1" data-bbox="210 478 846 791"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>4 blue counters</td> <td>3 red counters</td> <td>5 yellow counters</td> <td>7 green counters</td> </tr> <tr> <td>2 blue counters crossed out</td> <td>7 red counters crossed out</td> <td>3 yellow counters</td> <td>2 green counters</td> </tr> </tbody> </table> <table border="1" data-bbox="210 813 846 1126"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>2 blue blocks</td> <td>7 blue blocks</td> <td>3 blue sticks</td> <td>2 blue dots</td> </tr> </tbody> </table>	Thousands	Hundreds	Tens	Ones	4 blue counters	3 red counters	5 yellow counters	7 green counters	2 blue counters crossed out	7 red counters crossed out	3 yellow counters	2 green counters	Thousands	Hundreds	Tens	Ones	2 blue blocks	7 blue blocks	3 blue sticks	2 blue dots	<p>Part-Whole model, bar model, or represent place value counters pictorially</p> <table border="1" data-bbox="927 478 1393 702"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>4 blue counters</td> <td>3 red counters</td> <td>5 yellow counters</td> <td>7 green counters</td> </tr> <tr> <td>2 blue counters crossed out</td> <td>7 red counters crossed out</td> <td>3 yellow counters</td> <td>2 green counters</td> </tr> </tbody> </table> <p>4,357</p> <table border="1" data-bbox="936 762 1196 826"> <tr> <td>2,735</td> <td>?</td> </tr> </table> <p>4,357</p> <table border="1" data-bbox="936 871 1196 916"> <tr> <td>4,357</td> </tr> </table> <table border="1" data-bbox="936 938 1196 983"> <tr> <td>2,735</td> <td>← ?</td> </tr> </table> <pre>     graph TD       A((4,357)) --- B((2,735))       A --- C((?))     </pre>	Thousands	Hundreds	Tens	Ones	4 blue counters	3 red counters	5 yellow counters	7 green counters	2 blue counters crossed out	7 red counters crossed out	3 yellow counters	2 green counters	2,735	?	4,357	2,735	← ?	<p>Children can now use formal, written method.</p> $  \begin{array}{r}  3 \ 1 \\  4357 \\  - 2735 \\  \hline  1622  \end{array}  $ <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <math>4,357 - 2,735 = 1,622</math> </div>
Thousands	Hundreds	Tens	Ones																																				
4 blue counters	3 red counters	5 yellow counters	7 green counters																																				
2 blue counters crossed out	7 red counters crossed out	3 yellow counters	2 green counters																																				
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2,735	?																																						
4,357																																							
2,735	← ?																																						

# Year 5/6: Subtract numbers with more than 4 digits

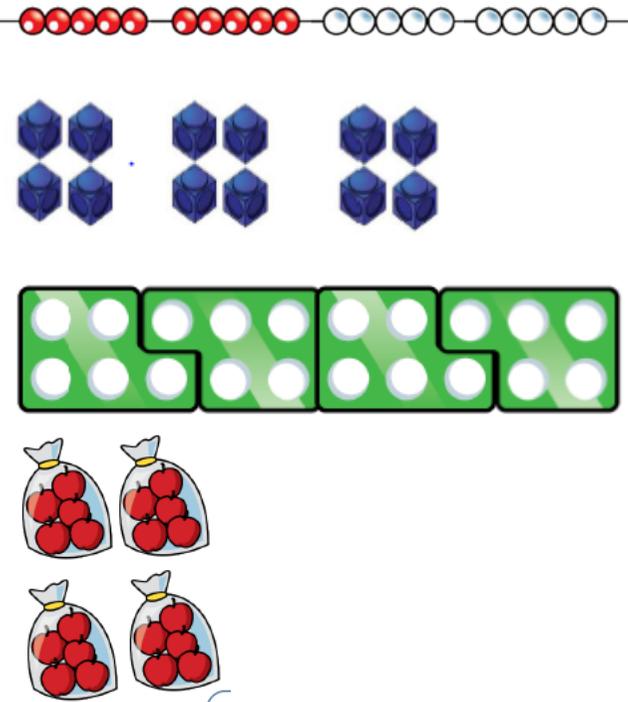
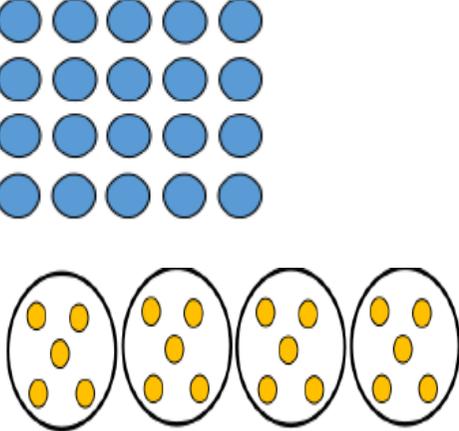
Concrete	Pictorial	Abstract																					
<p>Use place value counters to show subtraction</p> 	<p>Part-Whole or bar models used to represent subtraction</p> 	<p>Children can now use formal, written method.</p> <table border="1" data-bbox="1480 480 1883 667"> <tr> <td></td> <td>2</td> <td>9</td> <td><del>3</del></td> <td>13</td> <td>8</td> <td>2</td> </tr> <tr> <td>-</td> <td>1</td> <td>8</td> <td>2</td> <td>5</td> <td>0</td> <td>1</td> </tr> <tr> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>8</td> <td>8</td> <td>1</td> </tr> </table> <div style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center; margin: 10px 0;"> <math display="block">294,382 - 182,501 = 111,881</math> </div> <p>Again consider alternative questions such as missing number questions</p>		2	9	<del>3</del>	13	8	2	-	1	8	2	5	0	1		1	1	1	8	8	1
	2	9	<del>3</del>	13	8	2																	
-	1	8	2	5	0	1																	
	1	1	1	8	8	1																	

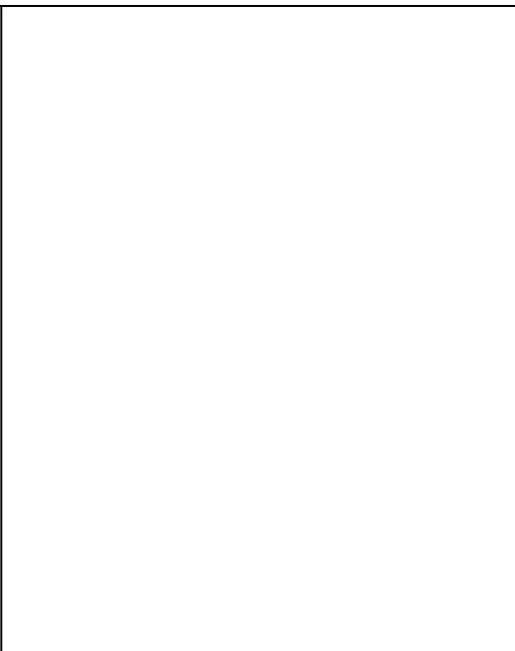
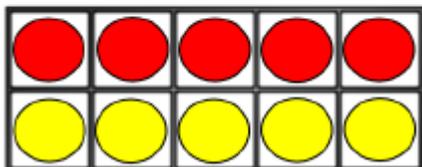
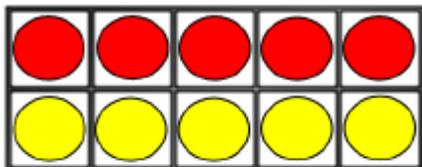
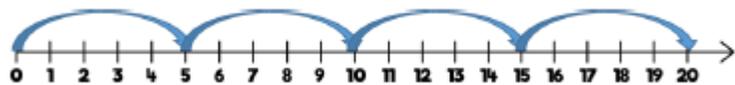
# Year 5/6: Subtract with up to 3 decimal places

Concrete	Pictorial	Abstract
<p>Place Value counters on a place value grid and any exchanges are shown.</p>  <p>The grid shows 5 ones (green circles), 4 tenths (yellow circles), and 3 hundredths (blue circles). An arrow indicates one one being moved to the tenths column, where it is replaced by ten tenths.</p>	<p>Drawn representation of place value counters on a grid. Part-whole model and bar models can also be used.</p>  <p>The pictorial shows a place value grid with 5 ones, 4 tenths, and 3 hundredths. Two ones and seven tenths are crossed out. A green arrow shows one one being moved to the tenths column. Below the grid is a part-whole model with 5.43 at the bottom, 2.7 on the left, and a question mark on the right.</p> <p>Part Whole Model and Bar models</p>  <p>The part-whole model shows 5.43 at the bottom, with 2.7 on the left and a question mark on the right. Below it are three bar models: a bar for 5.43, a bar for 2.7, and a bar for 2.7 with a question mark and a double-headed arrow below it.</p>	<p>Children can now use formal, written method.</p> $\begin{array}{r} 4 \ 1 \\ 5.43 \\ - 2.7 \\ \hline 2.73 \end{array}$ <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <math display="block">5.43 - 2.7 = 2.73</math> </div>

# Multiplication

Year 1/2: Solve 1-step multiplication problems using repeated addition

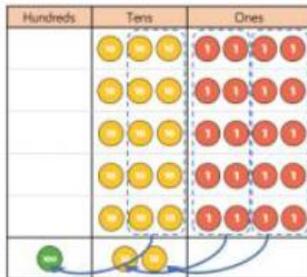
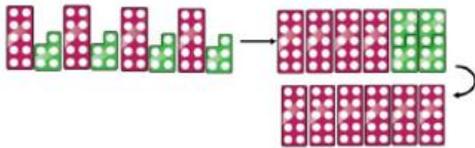
Concrete	Pictorial	Abstract
<p>Children use objects such as bead strings, cubes, numicon to make groups and add them using repeated addition. Number lines and 10s frames can also be used to count in equal groups</p> 	<p>Children can use arrays and other pictorial representations to show making equal groups to add</p> 	<p>Children will show a repeated addition with numbers.</p> <p>In Year 2, multiplication symbol is used to change a repeated addition to a multiplication</p> $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$ $5 \times 4 = 20$



# Year 3/4: Multiply 2-digit numbers by 1-digit numbers

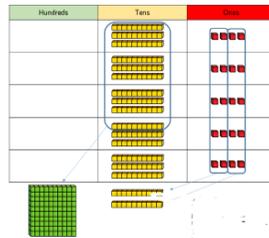
## Concrete

Use numicon or base 10 to partition and multiply numbers  
Use base ten/place value counters and place value grid to show multiplication and exchange.



## Pictorial

Children to draw out place value counters or base 10 to show multiplication.



## Abstract

Children can now use the expanded and short multiplication method.

$$34 \times 5 = 170$$

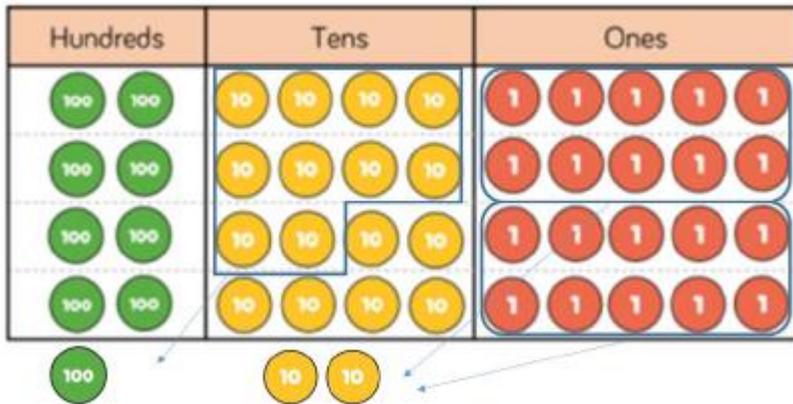
	H	T	O	
		3	4	
x			5	
		2	0	(5 × 4)
+	1	5	0	(5 × 30)
	1	7	0	

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

# Year 3/4: Multiply 3-digit numbers by 1-digit numbers

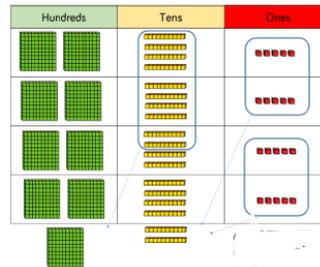
## Concrete

Use base 10 counters to show multiplications with exchange.



## Pictorial

Children draw place value counters or base 10 to show multiplications with exchange.



## Abstract

Children now use the short, formal written method.

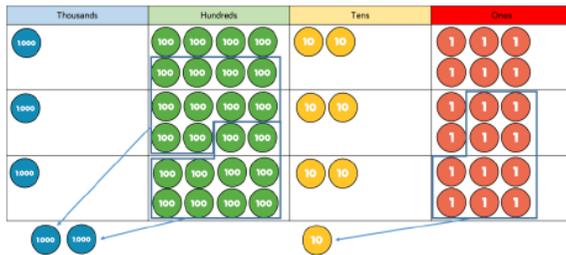
$$245 \times 4 = 980$$

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

# Year 5: Multiply 4-digit numbers by 1-digit numbers

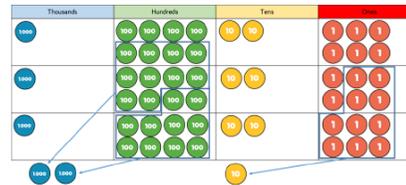
## Concrete

Use base 10 counters to show multiplications with exchange



## Pictorial

Children draw place value counters or base 10 to show multiplications with exchange



## Abstract

Children now use the short, formal written method. Children struggling with their times tables can use multiplication grids to support them so they can focus on the method.

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

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

# Year 5: Multiply 2-digit numbers by 2-digit numbers

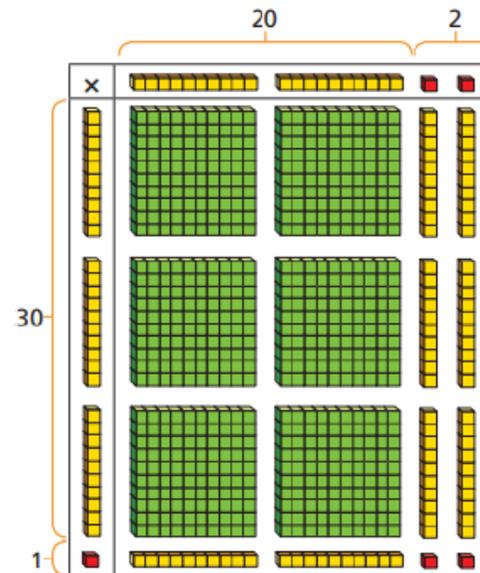
## Concrete

Use place value counters or base 10 counters to show area method.



## Pictorial

Draw place value counters or base 10 counters to show area method.



## Abstract

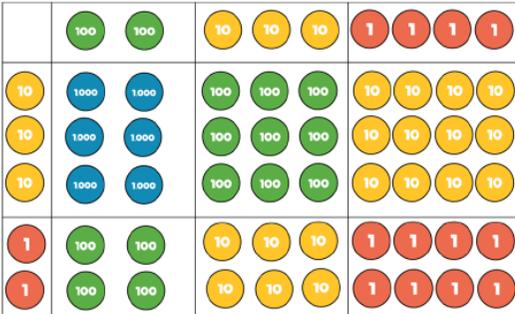
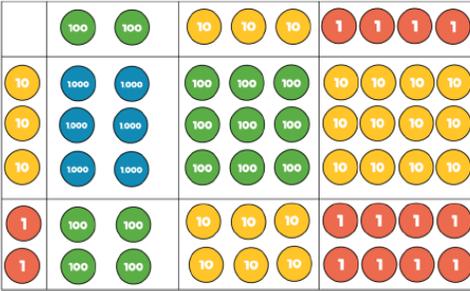
Use grid method to introduce 2-digit by 2-digit multiplication. Children now use the short, formal written method.

$$22 \times 31 = 682$$

×	20	2
30	600	60
1	20	2

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

# Year 5: Multiply 3-digit numbers by 2-digit numbers

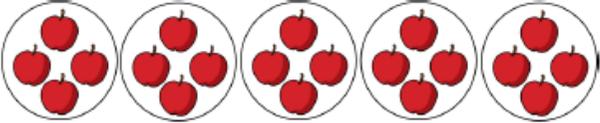
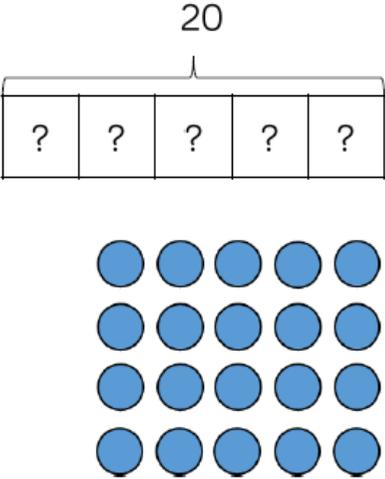
Concrete	Pictorial	Abstract																																				
<p>Use place value counters or base 10 counters to show area method.</p> 	<p>Draw place value counters or base 10 counters to show area method.</p> 	<p>Use grid method to introduce 3-digit by 2-digit multiplication. Children now use the short, formal written method.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center; margin: 10px 0;"> <math display="block">234 \times 32 = 7,488</math> </div> <table border="1" style="margin: 10px 0;"> <tbody> <tr> <td>x</td> <td>200</td> <td>30</td> <td>4</td> </tr> <tr> <td>30</td> <td>6,000</td> <td>900</td> <td>120</td> </tr> <tr> <td>2</td> <td>400</td> <td>60</td> <td>8</td> </tr> </tbody> </table> <table border="1" style="margin: 10px 0;"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>x</td> <td></td> <td>3</td> <td>2</td> </tr> <tr> <td></td> <td>4</td> <td>6</td> <td>8</td> </tr> <tr> <td><sup>1</sup>7</td> <td><sup>1</sup>0</td> <td>2</td> <td>0</td> </tr> <tr> <td>7</td> <td>4</td> <td>8</td> <td>8</td> </tr> </tbody> </table>	x	200	30	4	30	6,000	900	120	2	400	60	8	Th	H	T	O		2	3	4	x		3	2		4	6	8	<sup>1</sup> 7	<sup>1</sup> 0	2	0	7	4	8	8
x	200	30	4																																			
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<sup>1</sup> 7	<sup>1</sup> 0	2	0																																			
7	4	8	8																																			

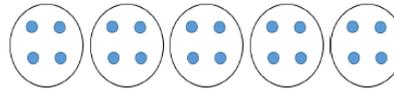
# Year 6: Multiply 4-digit numbers by 2-digit numbers

Concrete	Pictorial	Abstract																																													
		<p>At this point, concrete and pictorial representations are ineffective. Children now use the short, formal written method.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; display: inline-block; margin: 10px 0;"> <math>2,739 \times 28 = 76,692</math> </div> <table border="1" style="margin-top: 10px; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>TTh</th> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>2</td> <td>7</td> <td>3</td> <td>9</td> </tr> <tr> <td>×</td> <td></td> <td></td> <td>2</td> <td>8</td> </tr> <tr style="border-top: 2px solid black;"> <td>2</td> <td>1</td> <td>9</td> <td>1</td> <td>2</td> </tr> <tr> <td><small>2</small></td> <td><small>5</small></td> <td><small>3</small></td> <td><small>7</small></td> <td></td> </tr> <tr> <td>5</td> <td>4</td> <td>7</td> <td>8</td> <td>0</td> </tr> <tr> <td><small>1</small></td> <td></td> <td><small>1</small></td> <td></td> <td></td> </tr> <tr style="border-top: 2px solid black;"> <td>7</td> <td>6</td> <td>6</td> <td>9</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td><small>1</small></td> <td></td> <td></td> </tr> </tbody> </table>	TTh	Th	H	T	O		2	7	3	9	×			2	8	2	1	9	1	2	<small>2</small>	<small>5</small>	<small>3</small>	<small>7</small>		5	4	7	8	0	<small>1</small>		<small>1</small>			7	6	6	9	2			<small>1</small>		
TTh	Th	H	T	O																																											
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<small>1</small>		<small>1</small>																																													
7	6	6	9	2																																											
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# Division

## Year 1/2: Solve one-step problems by sharing

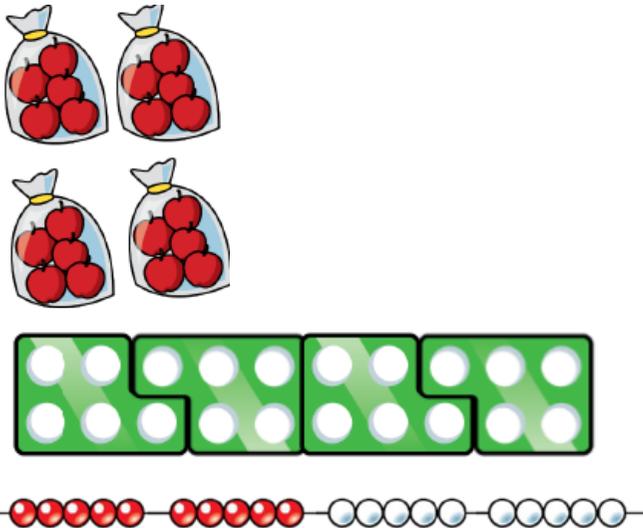
Concrete	Pictorial	Abstract
<p>Children share a range of concrete objects into equal groups. Count how many objects in each group.</p> 	<p>Children share using a range of pictorial models including arrays, bar model and groups</p> 	<p>Year 1 children focus on using concrete and pictorial models to divide. Introduce division symbol in Year 2.</p> $20 \div 5 = 4$ <p>There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?</p>



## Year 1/2: Solve one-step problems by grouping

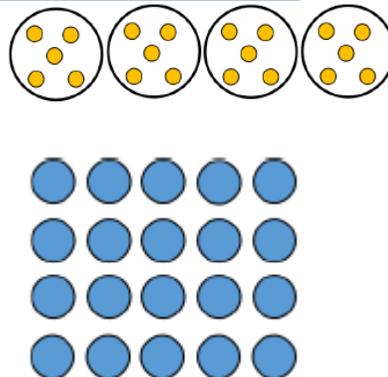
### Concrete

Children make groups of a number and count the number of groups. This can be done with objects, numicon, bead strings, tens frames and other concrete resources



### Pictorial

Children can draw groupings or show using an array.



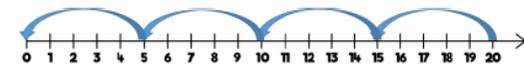
### Abstract

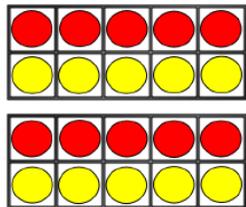
Year 1 children focus on using concrete and pictorial models to divide. Introduce division symbol in Year 2.

$$20 \div 5 = 4$$

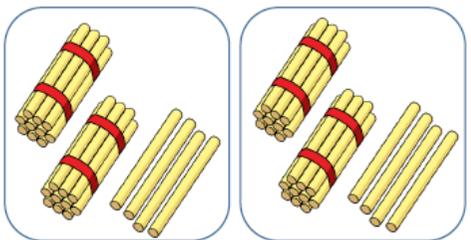
There are 20 apples altogether.  
They are shared equally between 5 bags.  
How many apples are in each bag?

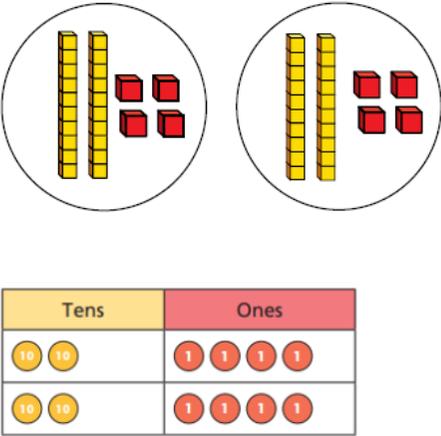
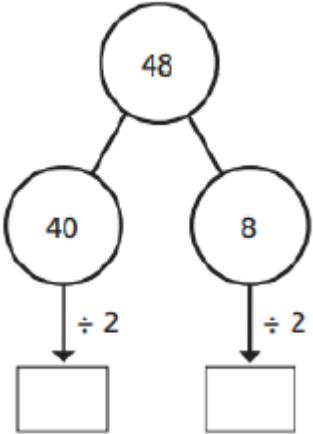
Children can use repeated subtraction on a number line to show each group.



		
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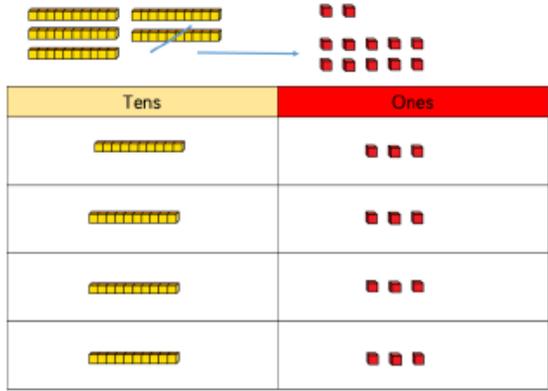
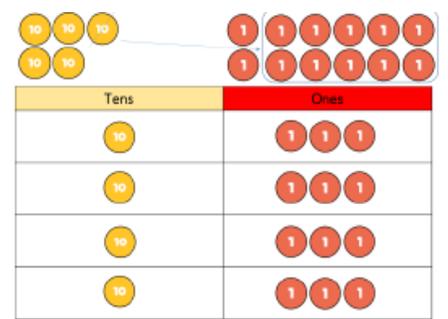
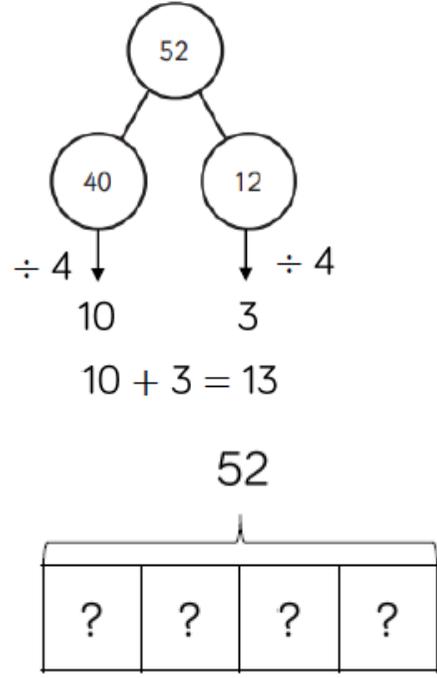
## Year 1/2: Divide a 2-digit by 1-digit number with no exchange

Concrete	Pictorial	Abstract						
<p>Use concrete objects such as straws or place value counters to share the tens and ones into equal groups.</p> 	<p>Children can draw place value chart and counters or show partitioning with the part-whole model.</p> <table border="1" data-bbox="952 965 1355 1133"> <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	<p>Children can use division sign and may be able to solve mentally.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center; width: fit-content; margin: 10px auto;"> <math display="block">48 \div 2 = 24</math> </div>
Tens	Ones							
10 10	1 1 1 1							
10 10	1 1 1 1							

 <table border="1" data-bbox="219 486 577 635"> <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		
Tens	Ones							
10 10	1 1 1 1							
10 10	1 1 1 1							

## Year 3/4: Divide a 2-digit by 1-digit number with exchange

Concrete	Pictorial	Abstract
<p>Children use base 10 or base value counters to share out equally on a place value chart. Exchange 1 ten for 10 ones. Start with equipment outside the place value chart.</p>	<p>Children can use flexible partitioning on a part whole model to divide. Other models can be used such as bar models.</p>	<p>Children may still show flexible partitioning when working out the answer.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center; margin-top: 10px;"> <math>52 \div 4 = 13</math> </div>

 <p style="text-align: center;"> <table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #FFD700;">Tens</th> <th style="background-color: #FF0000;">Ones</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">██████████</td><td style="text-align: center;">■■■■</td></tr> </tbody> </table> </p>  <p style="text-align: center;"> <table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #FFD700;">Tens</th> <th style="background-color: #FF0000;">Ones</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">10</td><td style="text-align: center;">1 1 1</td></tr> </tbody> </table> </p>	Tens	Ones	██████████	■■■■	██████████	■■■■	██████████	■■■■	██████████	■■■■	Tens	Ones	10	1 1 1	10	1 1 1	10	1 1 1	10	1 1 1	 <p style="text-align: center;"> <math display="block">  \begin{array}{r}  52 \\  \swarrow \quad \searrow \\  40 \quad 12 \\  \downarrow \quad \downarrow \\  \div 4 \quad \div 4 \\  10 \quad 3 \\  10 + 3 = 13  \end{array}  </math> </p> <p style="text-align: center;">52</p> <table border="1" style="margin: auto; border-collapse: collapse; width: 100px;"> <tr><td colspan="4" style="text-align: center;">52</td></tr> <tr><td style="width: 25px; height: 20px;">?</td><td style="width: 25px; height: 20px;">?</td><td style="width: 25px; height: 20px;">?</td><td style="width: 25px; height: 20px;">?</td></tr> </table>	52				?	?	?	?	
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## Year 3/4: Divide a 2-digit by 1-digit number with remainders

Concrete	Pictorial	Abstract
Children use base 10 or base value counters to share out equally on a place value chart. Exchange 1 ten for 10 ones. Start with equipment outside the place value chart. Remainder to be left outside the chart.	Children can use flexible partitioning on a part whole model to divide. Other models can be used such as bar models.	Children may still show flexible partitioning when working out the answer.

<p>The diagram shows two stages of a concrete division process. In the first stage, 53 is represented by 5 ten-blocks and 3 one-blocks. These are exchanged into 4 ten-blocks and 13 one-blocks. Four groups of 10 are then formed from the ten-blocks, leaving 1 ten-block and 13 one-blocks. The 13 one-blocks are further divided into 3 groups of 4, leaving 1 one-block. In the second stage, the same process is shown using circular counters: 5 tens (yellow) and 3 ones (red) are exchanged to 4 tens and 13 ones. Four groups of 10 are made, leaving 1 ten and 13 ones. The 13 ones are divided into 3 groups of 4, leaving 1 one. A single red counter is placed outside the chart to represent the remainder.</p>	<p>The diagram shows a pictorial representation of the division. At the top, a circle contains '53'. It branches into '40' and '13'. From '40', an arrow labeled '÷ 4' points down to '10'. From '13', an arrow labeled '÷ 4' points down to '3' and '1'. Below this, a bar model for 53 is shown, divided into five sections: four sections labeled '13' and one section labeled '1'. The number '53' is written above the bar model.</p>	<div style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center;"> <math>53 \div 4 = 13 \text{ r}1</math> </div>
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## Year 4/5: Divide a 2-digit by 1-digit number with remainders

Concrete	Pictorial	Abstract
Use place value chart and counters to make groups. Show exchanges where necessary. Any remainders are left outside the place value chart.	Draw place value chart and counters to make groups. Show exchanges where necessary. Remainders are shown outside the chart.	Children consider how many groups of 4 tens can we make? How many groups of 4 ones can we make? Show remainders where needed.

		$52 \div 4 = 13$										
		<p>Short division method is introduced in Year 5.</p>										
		<table border="1"> <tr> <td></td> <td></td> <td>1</td> <td>3</td> <td></td> </tr> <tr> <td></td> <td>4</td> <td>5</td> <td>12</td> <td></td> </tr> </table>			1	3			4	5	12	
		1	3									
	4	5	12									

## Year 4: Divide a 3-digit number by a 1-digit number

Concrete	Pictorial	Abstract
<p>Children can use place value counters and place value chart to start counters into equal groups. Show any exchanges that are necessary. Start with place value counters outside the place value chart. Any remainders stay outside the chart.</p>	<p>Use part-whole model or bar model to show equal groups. Use flexible partitioning where necessary. Show any remainders.</p>	<p>Flexible partitioning can still be used to support children. Show any remainders.</p>

The diagram illustrates the division of 844 by 4 through three stages: concrete, pictorial, and abstract.

**Concrete:** Shows 844 using place value counters (8 hundreds, 4 tens, 4 ones) and a place value chart with columns for Hundreds, Tens, and Ones.

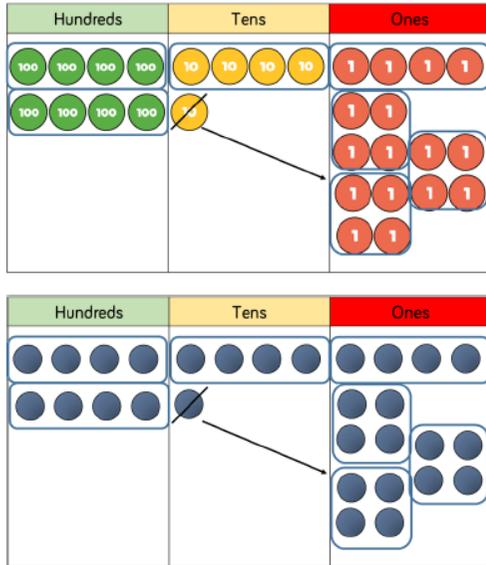
**Pictorial:** Shows 844 broken down into 800, 40, and 4. Each part is divided by 4, with arrows pointing to boxes for the results. Below is a long division box with four question marks.

**Abstract:** Shows the final equation:  $844 \div 4 = 211$ .

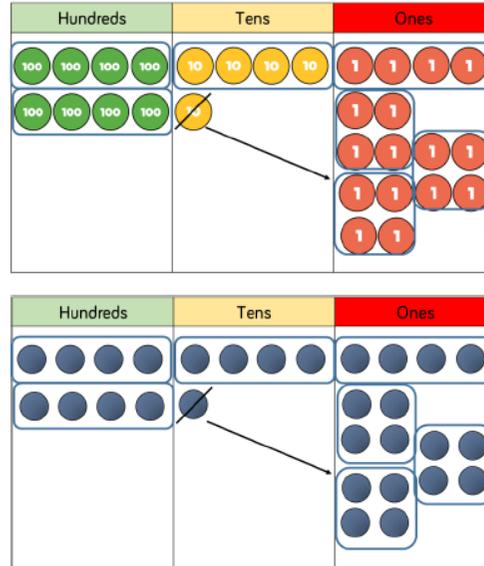
## Year 5: Divide a 3-digit number by a 1-digit number by grouping

Concrete	Pictorial	Abstract
Use place value counters or plain counters on a place value chart to make groups. Exchange counters where	Draw place value counters or plain counters on a place value chart to make	Short division method can be used to show division. Show remainders where necessary.

necessary. Remainders are left outside the place value chart.



groups. Exchange counters where necessary. Remainders are left outside the place value chart.



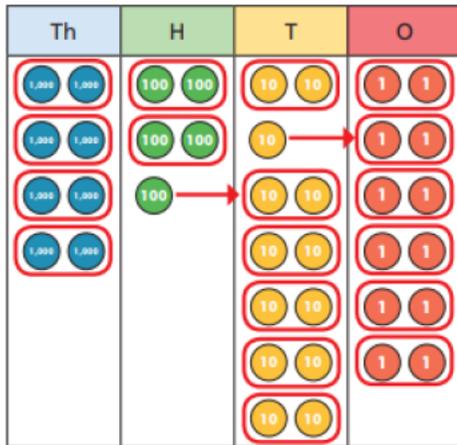
$$856 \div 4 = 214$$

		2	1	4
	4	8	5	16

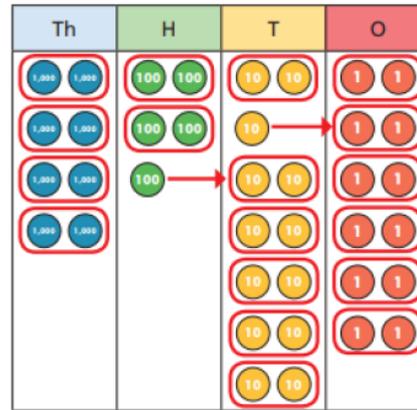
## Year 5: Divide a 4-digit number by a 1-digit number by grouping

Concrete	Pictorial	Abstract
Use place value counters or plain counters on a place value chart to make groups. Exchange counters where necessary.	Draw place value counters or plain counters on a place value chart to make groups.	Short division method can be used to show division. Show remainders where necessary.

necessary. Remainders are left outside the place value chart.



groups. Exchange counters where necessary. Remainders are left outside the place value chart.



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

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

## Year 6: Divide multiple digits by 2 digits

Concrete	Pictorial	Abstract
		Concrete and pictorial methods are now less effective. Children can write out multiples to support them. Show remainders where necessary.

		<div style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block; margin-bottom: 10px;"> <math>432 \div 12 = 36</math> </div> <table border="1" style="margin: 0 auto; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;">0</td> <td style="width: 20px; height: 20px;">3</td> <td style="width: 20px; height: 20px;">6</td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;">12</td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">4</td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">4<sub>3</sub></td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">7<sub>2</sub></td> </tr> </table> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block; margin-top: 10px;"> <math>7,335 \div 15 = 489</math> </div> <table border="1" style="margin: 0 auto; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;">0</td> <td style="width: 20px; height: 20px;">4</td> <td style="width: 20px; height: 20px;">8</td> <td style="width: 20px; height: 20px;">9</td> </tr> <tr> <td style="width: 20px; height: 20px;">15</td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">7</td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">7<sub>3</sub></td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">13<sub>3</sub></td> <td style="border-left: 2px solid black; width: 20px; height: 20px;">13<sub>5</sub></td> </tr> </table> <table border="1" style="margin: 0 auto; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px; height: 20px;">15</td> <td style="width: 20px; height: 20px;">30</td> <td style="width: 20px; height: 20px;">45</td> <td style="width: 20px; height: 20px;">60</td> <td style="width: 20px; height: 20px;">75</td> <td style="width: 20px; height: 20px;">90</td> <td style="width: 20px; height: 20px;">105</td> <td style="width: 20px; height: 20px;">120</td> <td style="width: 20px; height: 20px;">135</td> <td style="width: 20px; height: 20px;">150</td> </tr> </table>			0	3	6		12	4	4 <sub>3</sub>	7 <sub>2</sub>		0	4	8	9	15	7	7 <sub>3</sub>	13 <sub>3</sub>	13 <sub>5</sub>	15	30	45	60	75	90	105	120	135	150
		0	3	6																												
	12	4	4 <sub>3</sub>	7 <sub>2</sub>																												
	0	4	8	9																												
15	7	7 <sub>3</sub>	13 <sub>3</sub>	13 <sub>5</sub>																												
15	30	45	60	75	90	105	120	135	150																							

## Year 6: Divide multiple digits by 2 digits using long division

Concrete

Pictorial

Abstract

		<p>Concrete and pictorial methods are now less effective. Children can write out multiples to support them. Show remainders where necessary.</p> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block; margin: 10px 0;"> <math>432 \div 12 = 36</math> </div> <table style="display: inline-table; border-collapse: collapse; margin-right: 10px;"> <tr><td style="border: 1px solid black; width: 20px; height: 20px;"></td><td style="border: 1px solid black; width: 20px; height: 20px;"></td><td style="border: 1px solid black; width: 20px; height: 20px; border-right: 3px double black;">0</td><td style="border: 1px solid black; width: 20px; height: 20px;">3</td><td style="border: 1px solid black; width: 20px; height: 20px;">6</td></tr> <tr><td style="border: 1px solid black;">1</td><td style="border: 1px solid black;">2</td><td style="border: 1px solid black; border-right: 3px double black;">4</td><td style="border: 1px solid black;">3</td><td style="border: 1px solid black;">2</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black;">-</td><td style="border: 1px solid black; border-right: 3px double black;">3</td><td style="border: 1px solid black;">6</td><td style="border: 1px solid black;">0</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black; border-right: 3px double black;"></td><td style="border: 1px solid black;">7</td><td style="border: 1px solid black;">2</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black;">-</td><td style="border: 1px solid black; border-right: 3px double black;"></td><td style="border: 1px solid black;">7</td><td style="border: 1px solid black;">2</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black; border-right: 3px double black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;">0</td></tr> </table> <div style="display: inline-block; vertical-align: middle;"> <p>(x30)</p> <p>(x6)</p> </div> <ul style="list-style-type: none"> <li>· 12 × 1 = 12</li> <li>12 × 2 = 24</li> <li>12 × 3 = 36</li> <li>12 × 4 = 48</li> <li>12 × 5 = 60</li> <li>12 × 6 = 72</li> <li>12 × 7 = 84</li> <li>12 × 8 = 96</li> <li>12 × 7 = 108</li> <li>12 × 10 = 120</li> </ul>			0	3	6	1	2	4	3	2		-	3	6	0				7	2		-		7	2					0
		0	3	6																												
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				0																												

# Year 6: Divide multiple digits by 2 digits using long division

Concrete	Pictorial	Abstract
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Concrete and pictorial methods are now less effective. Children can write out multiples to support them. Show remainders where necessary. Remainders can also be shown as fractions.

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

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

$1 \times 15 = 15$

$2 \times 15 = 30$

$3 \times 15 = 45$

$4 \times 15 = 60$

$5 \times 15 = 75$

$10 \times 15 = 150$

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

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