



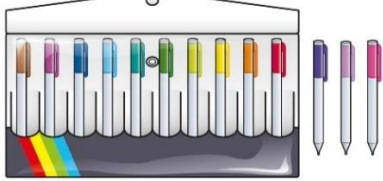
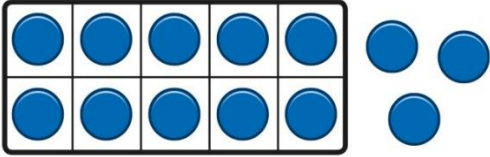
# Littleham C of E Primary

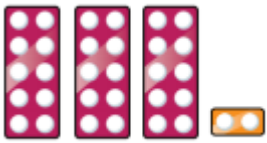

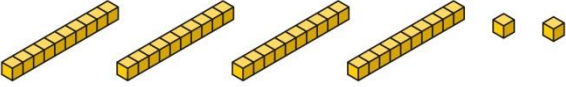
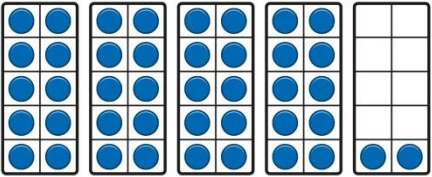
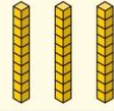

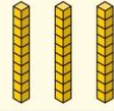

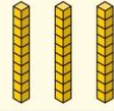


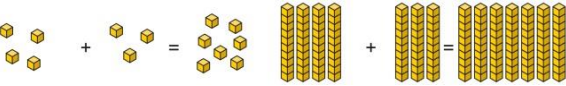
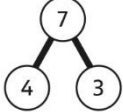
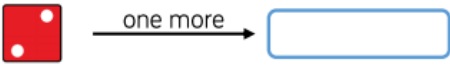

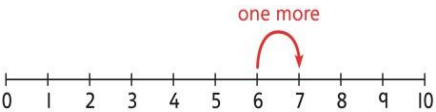
## Calculation policy: Years 1-6

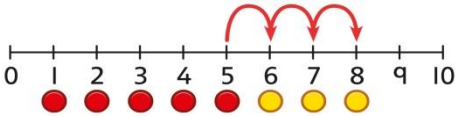

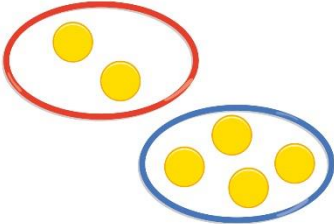
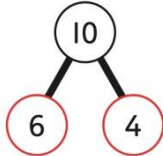

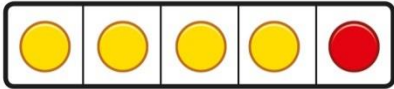
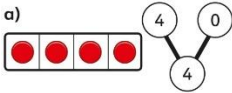
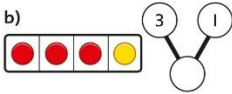


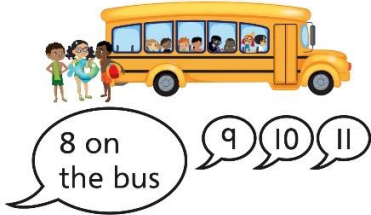
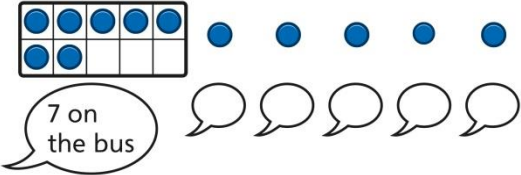
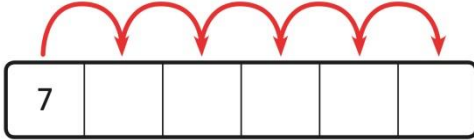

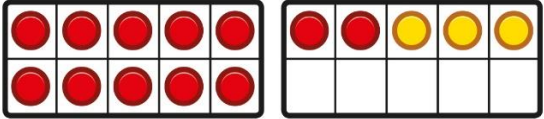

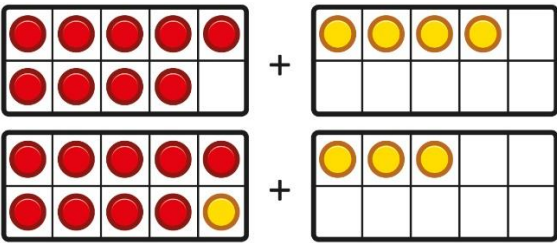
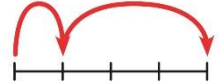
This calculation policy is a guide for teaching the progression of calculation strategies throughout primary education at Littleham but does not consider any strategy to be specific for use only in particular year groups. Depth of mathematical learning at Littleham is achieved through undertaking and representing mathematics in concrete, pictorial and abstract forms.

# Years 1&2

	Concrete	Pictorial	Abstract
<b>Place value</b>	<b>By Y2 children will be taught:</b>		
<b>Understanding 10s and 1s</b>  <b>Vocabulary:</b>  <b>Ones</b> <b>Tens</b> <b>Count on</b> <b>Groups</b> <b>Equals</b>	<b>Understanding teen numbers as a complete 10 and some more</b> Complete a group of 10 objects and count more.    <i>13 is 10 and 3 more.</i>	<b>Understanding teen numbers as a complete 10 and some more</b> Use a ten frame to support understanding of a complete 10 for teen numbers.    <i>13 is 10 and 3 more.</i>	<b>Understanding teen numbers as a complete 10 and some more.</b>  <i>1 ten and 3 ones equal 13.</i> $10 + 3 = 13$

<p><b>Understanding 10s and 1s</b></p> <p><u>Vocabulary:</u></p> <p>Groups Altogether Place value More Digit</p>	<p>Group objects into 10s and 1s.</p>  <p>Bead strings to understand</p> 	<p>Understand 10s and 1s equipment, and link with visual representations on ten frames.</p>  	<p>Represent numbers on a place value grid, using equipment or numerals.</p> <table border="1" data-bbox="1541 252 1854 577"> <tr> <td>Tens</td> <td>Ones</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>3</td> <td>2</td> </tr> <tr> <td>Tens</td> <td>Ones</td> </tr> <tr> <td>4</td> <td>3</td> </tr> </table>	Tens	Ones			3	2	Tens	Ones	4	3
Tens	Ones												
													
3	2												
Tens	Ones												
4	3												
<p><b>Adding 10s</b></p> <p><u>Vocabulary:</u></p> <p>Count on More Number bonds Altogether Sum Total</p>	<p>Use known bonds and unitising to add 10s.</p>  <p><i>I know that <math>4 + 3 = 7</math>. So, I know that 4 tens add 3 tens is 7 tens.</i></p>	<p>Use known bonds and unitising to add 10s.</p>  <p><i>I know that <math>4 + 3 = 7</math>. So, I know that 4 tens add 3 tens is 7 tens.</i></p>	<p>Use known bonds and unitising to add 10s.</p>  <p><math>4 + 3 = \square</math>      <math>4 + 3 = 7</math>  <math>4 \text{ tens} + 3 \text{ tens} = 7 \text{ tens}</math>      <math>40 + 30 = 70</math></p>										
<p><b>Addition</b></p>	<p><b>All children will be taught:</b></p>												
<p><b>Counting and adding more</b></p> <p><u>Vocabulary:</u></p> <p>Count on More Number bonds</p>	<p><b>Concrete</b></p>	<p><b>Pictorial</b></p>	<p><b>Abstract</b></p>										
<p>Children add one more person or object to a group to find one more.</p> <p>Language: the number after, one more than</p> <p>Use of number line and dice</p> 	<p>Children add one more cube or counter to a group to represent one more.</p> <p>Numicon supports this area.</p> 	<p>Use a number line to understand how to link counting on with finding one more.</p>  <p><i>One more than 6 is 7. 7 is one more than 6.</i></p>											

<p><b>Altogether</b> <b>Sum</b> <b>Total</b> <b>Equals</b></p>		<p><i>One more than 4 is 5.</i></p>	<p>Learn to link counting on with adding more than one.</p>  <p><math>5 + 3 = 8</math></p>
<p><b>Understanding part-part-whole relationship</b></p> <p><b>Vocabulary:</b> <b>Groups</b> <b>Altogether</b> <b>Total</b> <b>Add</b></p>	<p>Sort people and objects into parts and understand the relationship with the whole.</p>  <p><i>The parts are 2 and 4. The whole is 6.</i></p>	<p>Children draw to represent the parts and understand the relationship with the whole.</p>  <p><i>The parts are 1 and 5. The whole is 6.</i></p>	<p>Use a part-whole model to represent the numbers.</p>  <p><math>6 + 4 = 10</math></p> <p><math>6 + 4 = 10</math></p>
<p><b>Knowing and finding number bonds within 10</b></p> <p><b>Vocabulary:</b> <b>Count on</b> <b>More</b> <b>Number bonds</b> <b>Altogether</b> <b>Sum</b> <b>Total</b></p>	<p>Break apart a group and put back together to find and form number bonds.</p> <p><math>7 + 3 = 10</math></p>  <p><b>7+3</b></p>	<p>Use five and ten frames to represent key number bonds.</p>  <p><math>5 = 4 + 1</math></p>	<p>Use a part-whole model alongside other representations to find number bonds. Make sure to include examples where one of the parts is zero.</p> <p>a)</p>  <p>b)</p>  <p><math>4 + 0 = 4</math> <math>3 + 1 = 4</math></p>
<p><b>Adding by counting on</b></p>	<p>Children use knowledge of counting to 20 to find a total by counting on using</p>	<p>Children use counters to support and represent their counting on strategy.</p>	<p>Children use number lines or number tracks to support their counting on strategy.</p>

<p><b>Vocabulary:</b></p> <p>Count on More Altogether Add Sum Total Ones Greater</p>	<p>people or objects.</p> 		 <p><math>7 + 5 = \square</math></p>
<p><b>Adding the 1s</b></p> <p><b>Vocabulary:</b></p> <p>Count on More Altogether Add Sum Total Ones</p>	<p>Children use bead strings to recognise how to add the 1s to find the total efficiently.</p>  <p><math>2 + 3 = 5</math> <math>12 + 3 = 15</math></p>	<p>calculations using ten frames to add a teen and 1s.</p>  <p><math>2 + 3 = 5</math> <math>12 + 3 = 15</math></p>	<p>Children recognise that a teen is made from a 10 and some 1s and use their knowledge of addition within 10 to work efficiently.</p> <p><math>3 + 5 = 8</math> So, <math>13 + 5 = 18</math></p>
<p><b>Bridging the 10 using number bonds</b></p> <p><b>Vocabulary:</b></p> <p>Count on More Number bonds Altogether Sum Total</p>	<p>Children use a bead string to complete a 10 and understand how this relates to the addition.</p>  <p><i>7 add 3 makes 10. So, 7 add 5 is 10 and 2 more.</i></p>	<p>Children use counters to complete a ten frame and understand how they can add using knowledge of number bonds to 10.</p> 	<p>Use a number line to support the calculation.</p>  <p><math>9 + 4 = 13</math></p>

**Adding a 1-digit number to a 2-digit number not bridging a 10**

**Vocabulary:**

**Count on  
More  
Number bonds  
Altogether  
Sum  
Total  
Place value  
Ones  
Tens**

Add the 1s to find the total. Use known bonds within 10.



*41 is 4 tens and 1 one.  
41 add 6 ones is 4 tens and 7 ones.*

This can also be done in a place value grid.

T	O

Add the 1s.

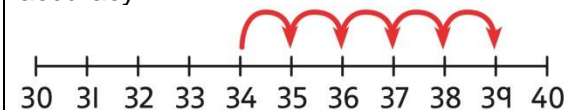


*34 is 3 tens and 4 ones.  
4 ones and 5 ones are 9 ones.  
The total is 3 tens and 9 ones.*

T	O

Add the 1s.

Understand the link between counting on and using known number facts. Children should be encouraged to use known number bonds to improve efficiency and accuracy.



This can be represented horizontally or vertically.

$$34 + 5 = 39$$

or

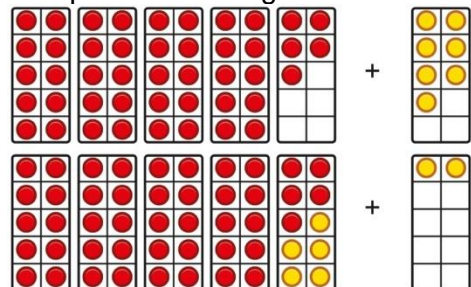
T	O
3	4
+	5
	9

**Adding a 1-digit number to a 2-digit number bridging 10**

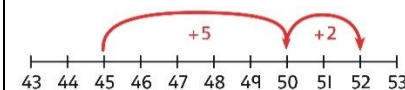
**Vocabulary:**

**Count on  
More  
Number bonds  
Altogether**

Complete a 10 using number bonds.

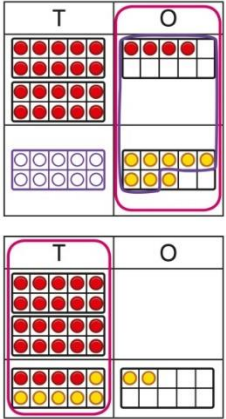

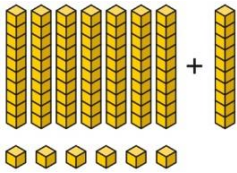


Complete a 10 using number bonds.

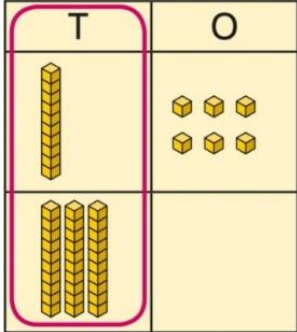
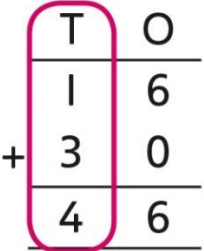
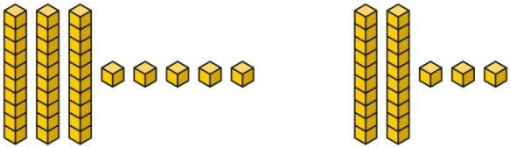
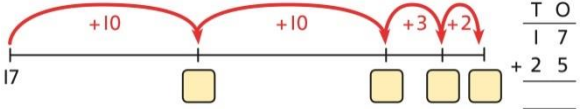


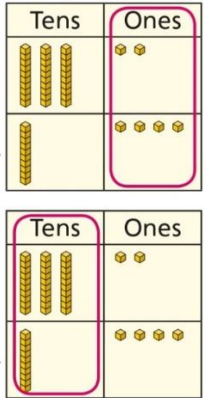

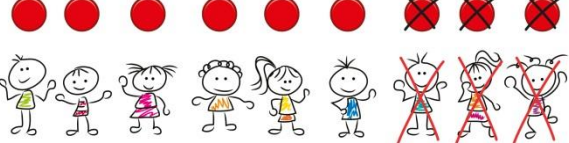
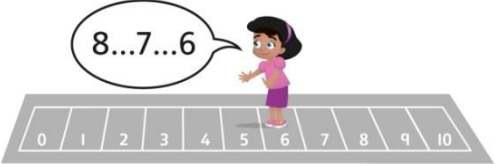
$$7 = 5 + 2$$

$$45 + 5 + 2 = 52$$

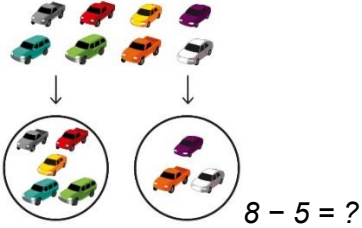
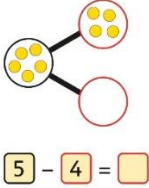
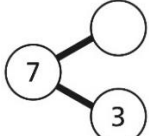
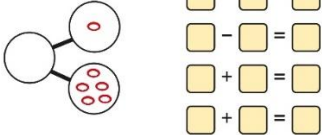

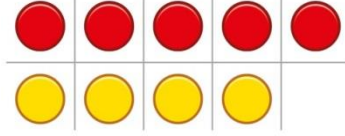
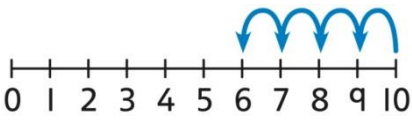

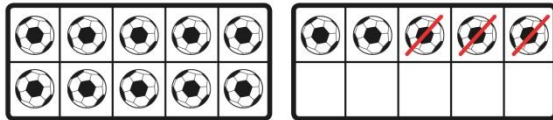
<p>Sum Total Place value Ones Tens</p>		
<p><b>Adding a 1-digit number to a 2-digit number using exchange</b></p> <p><u>Vocabulary:</u></p> <p>Count on More Number bonds Altogether Sum Total Place value Ones Tens Exchange</p>	<p>Exchange 10 ones for 1 ten.</p> 	<p>Exchange 10 ones for 1 ten.</p> 
<p><b>Adding a multiple of 10 to a 2-digit number</b></p> <p><u>Vocabulary:</u></p> <p>Count on More Altogether</p>	<p>Add the 10s and then recombine.</p>  <p>66 is 6 tens and 6 ones. 66 + 10 = 76</p>	<p>Add the 10s and then recombine.</p> <p><math>37 + 20 = ?</math></p> <p><math>30 + 20 = 50</math> <math>50 + 7 = 57</math></p> <p><math>37 + 20 = 57</math></p>


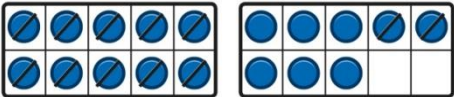
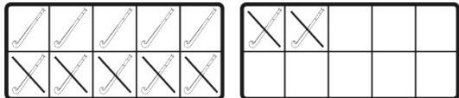
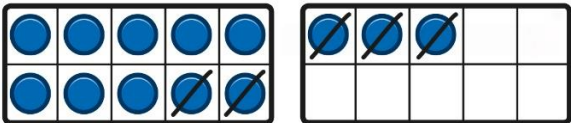
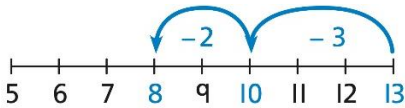


<p><b>Sum</b> <b>Total</b> <b>Place value</b> <b>Ones</b> <b>Tens</b></p>			
<p><b>Adding a multiple of 10 to a 2-digit number using columns</b></p> <p><u>Vocabulary:</u></p> <p>Count on More Altogether Sum Total Place value Ones Tens</p>	<p>Add the 10s using base 10 and a place value grid to support.</p>  <p>16 is 1 ten and 6 ones. 30 is 3 tens. There are 4 tens and 6 ones in total.</p>	<p>Add the 10s represented vertically. Children must understand how the method relates to unitising of 10s and place value.</p>  <p><math>1 + 3 = 4</math> <math>1 \text{ ten} + 3 \text{ tens} = 4 \text{ tens}</math> <math>16 + 30 = 46</math></p>	
<p><b>Adding two 2-digit numbers</b></p> <p><u>Vocabulary:</u></p> <p>Place value Ones Tens More Altogether Sum</p>	<p>Add the 10s and 1s separately.</p>  <p><math>5 + 3 = 8</math> There are 8 ones in total.</p> <p><math>3 + 2 = 5</math> (3 tens + 2 tens) There are 5 tens in total.</p>	<p>Add the 10s and 1s separately. Use a part-whole model to support.</p> <p>Use place value chart and base 10 to support</p> <p><math>11 = 10 + 1</math> <math>32 + 10 = 42</math> <math>42 + 1 = 43</math></p> <p><math>32 + 11 = 43</math></p>	<p>Add the 10s and the 1s separately, bridging 10s where required. A number line can support the calculations.</p>  <p><math>17 + 25</math></p>

<b>Total</b>	$35 + 23 = 58$		
<b>Adding two 2-digit numbers using a place value grid</b>  <b>Vocabulary:</b>  <b>Place value</b> <b>Ones</b> <b>Tens</b> <b>More</b> <b>Altogether</b> <b>Sum</b> <b>Total</b>	<p>Add the 1s. Then add the 10s.</p> 	<p>Add the 1s. Then add the 10s.</p> $\begin{array}{r} \text{T} \quad \text{O} \\ 3 \quad 2 \\ + 1 \quad 4 \\ \hline 4 \quad 6 \end{array}$	
<b>Subtraction</b>	<b>All children will be taught:</b>		
	<b>Concrete</b>	<b>Pictorial</b>	<b>Abstract</b>
<b>Counting back and taking away</b>  <b>Vocabulary:</b>  <b>Less</b> <b>Take</b> <b>Remove</b> <b>Less than</b> <b>Fewer</b> <b>Count back</b>	<p>Children arrange objects and remove to find how many are left.</p>  <p>1 less than 6 is 5. 6 subtract 1 is 5.</p>	<p>Children draw and cross out or use counters to represent objects from a problem.</p>  <p><math>9 - \square = \square</math> There are <input type="text"/> children left.</p>	<p>Children count back to take away and use a number line or number track to support the method.</p>  <p><math>9 - 3 = 6</math></p>

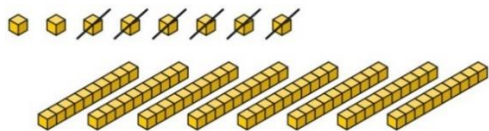


<p><b>Finding a missing part, given a whole and a part</b></p> <p><u>Vocabulary:</u></p> <p>Total Less Take away Fewer Part-part-whole</p>	<p>Children separate a whole into parts and understand how one part can be found by subtraction.</p>  <p><math>8 - 5 = ?</math></p>	<p>Children represent a whole and a part and understand how to find the missing part by subtraction.</p>  <p><math>5 - 4 = \square</math></p>	<p>Children use a part-whole model to support the subtraction to find a missing part.</p>  <p><math>7 - 3 = ?</math></p> <p>Children develop an understanding of the relationship between addition and subtraction facts in a part-whole model.</p>  <p>If I know this what else do I know?</p>
<p><b>Finding the difference</b></p> <p><u>Vocabulary:</u></p> <p>Subtract Fewer Less Gone Count back</p>	<p>Arrange two groups so that the difference between the groups can be worked out.</p>  <p><i>8 is 2 more than 6. 6 is 2 less than 8. The difference between 8 and 6 is 2.</i></p>	<p>Represent objects using sketches or counters to support finding the difference.</p>  <p><math>5 - 4 = 1</math> <i>The difference between 5 and 4 is 1.</i></p>	<p>Children understand 'find the difference' as subtraction.</p>  <p><math>10 - 4 = 6</math> <i>The difference between 10 and 6 is 4.</i></p>
<p><b>Subtraction within 20</b></p> <p><u>Vocabulary:</u></p> <p>Subtract Fewer</p>	<p>Understand when and how to subtract 1s efficiently.</p> <p>Use a bead string to subtract 1s efficiently.</p> 	<p>Understand when and how to subtract 1s efficiently.</p>  <p><math>5 - 3 = 2</math> <math>15 - 3 = 12</math></p>	<p>Understand how to use knowledge of bonds within 10 to subtract efficiently.</p> <p><math>5 - 3 = 2</math> <math>15 - 3 = 12</math></p>

<p><b>Less</b> <b>Count back</b> <b>Difference</b> <b>Take away</b></p>	$5 - 3 = 2$ $15 - 3 = 12$		
<p><b>Subtracting 10s and 1s</b></p> <p><u><b>Vocabulary:</b></u></p> <p><b>Subtract Fewer Less Count back Difference Take away Place value</b></p>	<p>For example: <math>18 - 12</math></p> <p>Subtract 12 by first subtracting the 10, then the remaining 2.</p>  <p><i>First subtract the 10, then take away 2.</i></p>	<p>For example: <math>18 - 12</math></p> <p>Use ten frames to represent the efficient method of subtracting 12.</p>  <p><i>First subtract the 10, then subtract 2.</i></p>	<p>Use a part-whole model to support the calculation.</p> $19 - 14$ $19 - 10 = 9$ $9 - 4 = 5$ So, $19 - 14 = 5$
<p><b>Subtraction bridging 10 using number bonds</b></p> <p><u><b>Vocabulary:</b></u></p> <p><b>Subtract Fewer Less Count back Difference Take away Place value Number bonds</b></p>	<p>For example: <math>12 - 7</math></p> <p>Arrange objects into a 10 and some 1s, then decide on how to split the 7 into parts.</p>  <p><i>7 is 2 and 5, so I take away the 2 and then the 5.</i></p>	<p>Represent the use of bonds using ten frames.</p>  <p><i>For <math>13 - 5</math>, I take away 3 to make 10, then take away 2 to make 8.</i></p>	<p>Use a number line and a part-whole model to support the method.</p> $13 - 5$ 
<p><b>Subtracting</b></p>	<p>Use known number bonds and unitising</p>	<p>Use known number bonds and unitising to</p>	<p>Use known number bonds and unitising to</p>

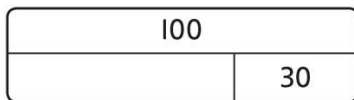
**multiples of 10**

to subtract multiples of 10.



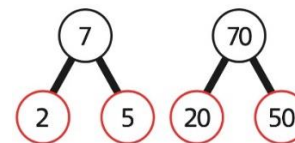
8 subtract 6 is 2.  
So, 8 tens subtract 6 tens is 2 tens.

subtract multiples of 10.



$10 - 3 = 7$   
So, 10 tens subtract 3 tens is 7 tens.

subtract multiples of 10.



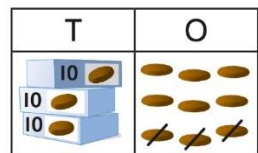
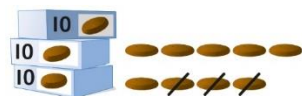
If I know that  $7 - 5 = 2$  then I know that  $70 - 50 = 20$

**Vocabulary:**

**Difference**  
**Take away**  
**Place value**

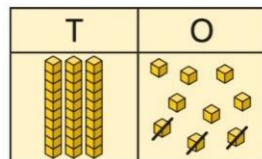
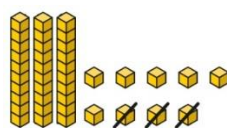
**Subtracting a single-digit number**

Subtract the 1s. This may be done in or out of a place value grid.

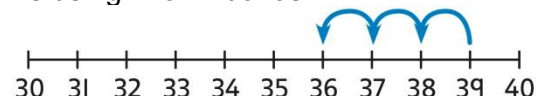


$39 - 3 = 36$

Subtract the 1s. This may be done in or out of a place value grid.



Subtract the 1s. Understand the link between counting back and subtracting the 1s using known bonds.



$$\begin{array}{r} \text{T} \quad \text{O} \\ 3 \quad 9 \\ - \quad 3 \\ \hline 3 \quad 6 \end{array}$$

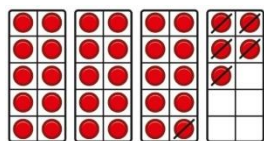
$9 - 3 = 6$   
 $39 - 3 = 36$

**Vocabulary:**

**Subtract Fewer**  
**Less**  
**Count back**  
**Difference**  
**Take away**  
**Place value**

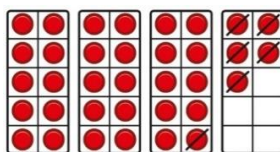
**Subtracting a single-digit number bridging 10**

Bridge 10 by using known bonds.



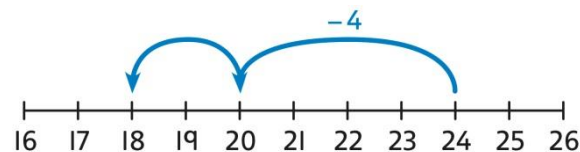
$35 - 6$   
I took away 5 counters, then 1 more.

Bridge 10 by using known bonds.



$35 - 6$   
First, I will subtract 5, then 1.

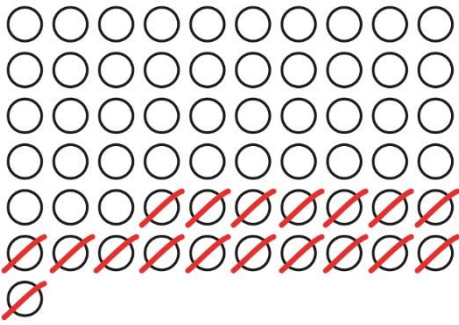
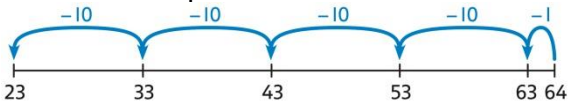
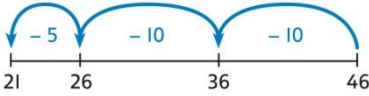
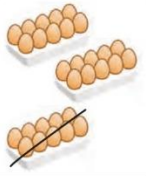

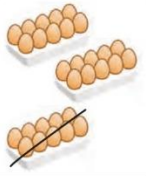





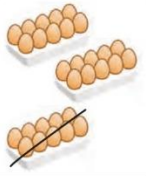



Bridge 10 by using known bonds.






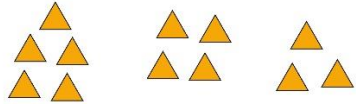

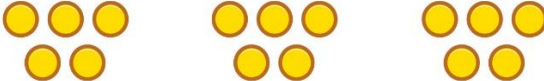
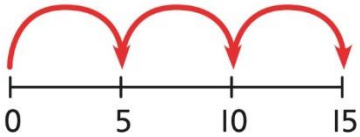


$24 - 6 = ?$   
 $24 - 4 - 2 = ?$


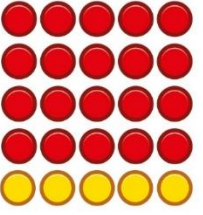
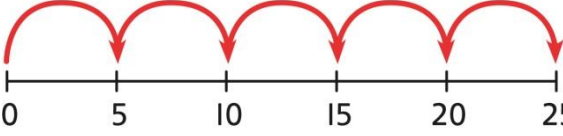

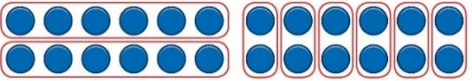

**Vocabulary:**

**Subtract Fewer**  
**Less**  
**Count back**  
**Difference**


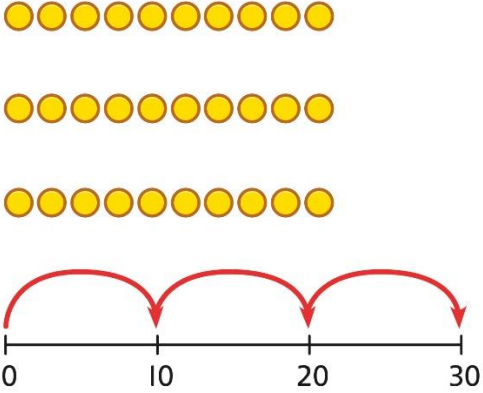
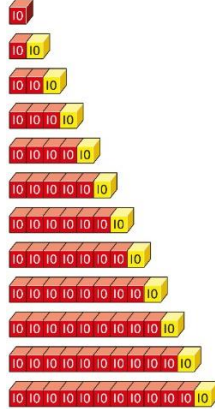
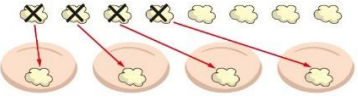
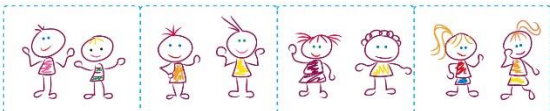
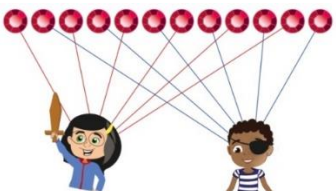
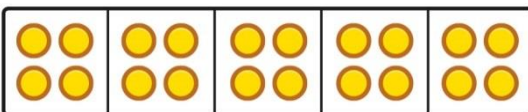
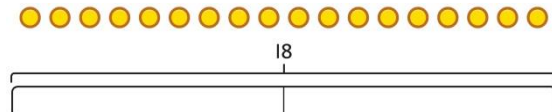
<p><b>Take away</b> <b>Place value</b> <b>Number bonds</b></p>																																																																																																							
<p><b>Subtracting a 2-digit number</b></p> <p><u>Vocabulary:</u></p> <p><b>Subtract</b> <b>Fewer</b> <b>Less</b> <b>Count back</b> <b>Difference</b> <b>Take away</b> <b>Place value</b></p>	<p>Subtract by taking away.</p>  <p><math>61 - 18</math> <i>I took away 1 ten and 8 ones.</i></p>	<p>Subtract the 10s and the 1s.</p> <p>This can be represented on a 100 square.</p> <table border="1" data-bbox="891 402 1258 769"> <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> <p><b>68-26</b></p>	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	<p>Subtract the 10s and the 1s.</p> <p>This can be represented on a number line.</p>  <p><math>64 - 41 = ?</math></p> <p><math>64 - 1 = 63</math> <math>63 - 40 = 23</math> <math>64 - 41 = 23</math></p>  <p><math>46 - 20 = 26</math> <math>26 - 5 = 21</math> <math>46 - 25 = 21</math></p>
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<p><b>Subtracting a 2-digit number using place value and columns</b></p> <p><u>Vocabulary:</u></p> <p><b>Subtract</b> <b>Fewer</b> <b>Less</b> <b>Count back</b> <b>Difference</b></p>	<p>Subtract the 1s. Then subtract the 10s. This may be done in or out of a place value grid.</p> <table border="1" data-bbox="344 1091 658 1327"> <thead> <tr> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p><math>38 - 16 = 22</math></p>	T	O			<p>Subtract the 1s. Then subtract the 10s.</p> <table border="1" data-bbox="891 1024 1115 1152"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Tens	Ones			<p>Using column subtraction, subtract the 1s. Then subtract the 10s.</p> <table border="1" data-bbox="1550 1056 1639 1216"> <tr><td>T</td><td>O</td></tr> <tr><td>4</td><td>5</td></tr> <tr><td>- 1</td><td>2</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td></td><td>3</td></tr> </table> <table border="1" data-bbox="1550 1232 1639 1391"> <tr><td>T</td><td>O</td></tr> <tr><td>4</td><td>5</td></tr> <tr><td>- 1</td><td>2</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>3</td><td>3</td></tr> </table>	T	O	4	5	- 1	2	<hr/>			3	T	O	4	5	- 1	2	<hr/>		3	3																																																																								
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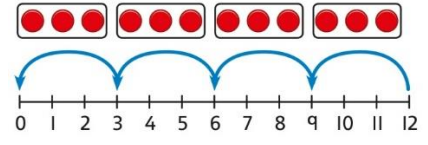
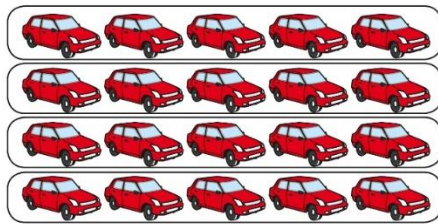
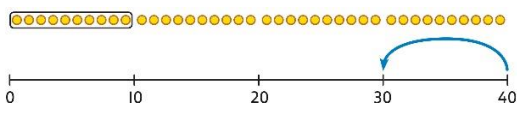
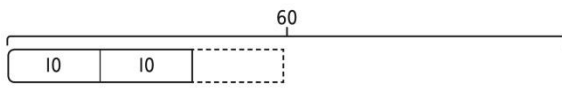
<b>Take away</b> <b>Place value</b>			
<b>Multiplication</b> All children will be taught			
	<b>Concrete</b>	<b>Pictorial</b>	<b>Abstract</b>
<b>Recognising and making equal groups</b>  <u>Vocabulary:</u>  <b>Groups</b> <b>Same</b> <b>Equal</b> <b>Represent</b>	Children arrange objects in equal and unequal groups and understand how to recognise whether they are equal.  A  B  C   	Children draw and represent equal and unequal groups.  A  B 	<i>Three equal groups of 4.</i> <i>Four equal groups of 3.</i>
<b>Equal groups and repeated addition</b>  <b>Finding the total of equal groups by counting in 2s, 5s and 10s</b>  <u>Vocabulary:</u>  <b>Groups</b> <b>Same</b> <b>Equal</b> <b>Represent</b> <b>Counting on</b> <b>Place value</b>	Recognise equal groups and write as repeated addition and as multiplication.   <i>3 groups of 5 chairs</i> <i>15 chairs altogether</i>	Recognise equal groups using standard objects such as counters and write as repeated addition and multiplication.   <i>3 groups of 5</i> <i>15 in total</i> Counting in 2s, 5s and 10s	Use a number line and write as repeated addition and as multiplication.   $5 + 5 + 5 = 15$ $3 \times 5 = 15$



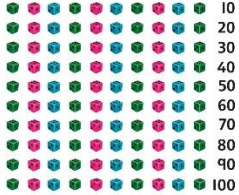

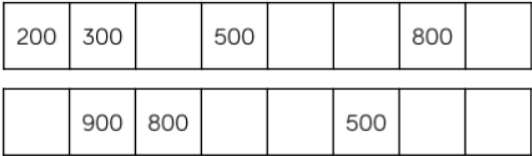

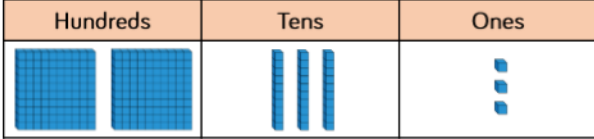
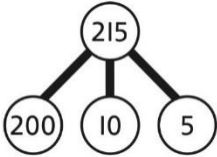
<p><b>Repeated addition</b></p>			
<p><b>Using arrays to represent multiplication and support understanding</b></p> <p><u>Vocabulary:</u></p> <p>Groups Same Equal Counting on Repeated addition</p>	<p>Understand the relationship between arrays, multiplication and repeated addition.</p>  <p>4 groups of 5</p>	<p>Understand the relationship between arrays, multiplication and repeated addition.</p>  <p>4 groups of 5 ... 5 groups of 5</p>	<p>Understand the relationship between arrays, multiplication and repeated addition.</p>  <p><math>5 \times 5 = 25</math></p>
<p><b>Understanding commutativity</b></p> <p><u>Vocabulary:</u></p> <p>Pattern Groups Same Equal</p>	<p>Use arrays to visualise commutativity.</p>  <p>I can see 6 groups of 3. I can see 3 groups of 6.</p>	<p>Form arrays using counters to visualise commutativity. Rotate the array to show that orientation does not change the multiplication.</p>  <p>This is 2 groups of 6 and also 6 groups of 2.</p>	<p>Use arrays to visualise commutativity.</p>  <p><math>4 + 4 + 4 + 4 + 4 = 20</math> <math>5 + 5 + 5 + 5 = 20</math> <math>4 \times 5 = 20</math> and <math>5 \times 4 = 20</math></p>
<p><b>Learning x2, x5 and x10 table facts</b></p> <p><u>Vocabulary:</u></p>	<p>Develop an understanding of how to unitise groups of 2, 5 and 10 and learn corresponding times-table facts.</p>	<p>Understand how to relate counting in unitised groups and repeated addition with knowing key times-table facts.</p>	<p>Understand how the times-tables increase and contain patterns.</p>



<p><b>Times tables</b> <b>Pattern</b> <b>Groups</b> <b>Same</b> <b>Equal</b> <b>Counting on</b> <b>Repeated</b> <b>addition</b></p>	 <p>3 groups of 10 ... 10, 20, 30 <math>3 \times 10 = 30</math></p>	 <p><math>10 + 10 + 10 = 30</math> <math>3 \times 10 = 30</math></p>	 <p> <math>1 \times 10 = \square</math>  <math>2 \times 10 = \square</math>  <math>3 \times 10 = \square</math>  <math>4 \times 10 = \square</math>  <math>5 \times 10 = \square</math>  <math>6 \times 10 = \square</math>  <math>7 \times 10 = \square</math>  <math>8 \times 10 = \square</math>  <math>9 \times 10 = \square</math>  <math>10 \times 10 = \square</math>  <math>11 \times 10 = \square</math>  <math>12 \times 10 = \square</math> </p> <p><math>5 \times 10 = 50</math> <math>6 \times 10 = 60</math></p>
<p><b>Division</b> All children will be taught</p>			
<p><b>Concrete</b></p>		<p><b>Concrete</b></p>	
<p><b>Sharing</b></p> <p><u>Vocabulary:</u></p> <p><b>Share</b> <b>Groups</b></p>	<p>Share a set of objects into equal parts and work out how many are in each part.</p> 	<p>Sketch or draw to represent sharing into equal parts/groups.</p> 	<p>10 shared into 2 equal groups gives 5 in each group.</p>
<p><b>Sharing &amp; Grouping</b> <b>equally</b></p> <p><u>Vocabulary:</u></p> <p><b>Same</b> <b>Equal</b></p>	<p>Start with a whole and share into equal parts, one at a time.</p> 	<p>Represent the objects shared into equal parts using a bar model.</p>  <p>20 shared into 5 equal parts.</p>	<p>Use a bar model to support understanding of the division.</p>  <p><math>18 \div 2 = 9</math></p>

<p><b>Share Groups</b></p>	<p>12 shared equally between 2. They get 6 each.</p> <p>Understand how to make equal groups from a whole.</p>  <p>8 divided into 4 equal groups. There are 2 in each group.</p>	<p>There are 4 in each part.</p> <p>Understand the relationship between grouping and the division statements.</p> <p><math>12 \div 3 = 4</math></p>  <p><math>12 \div 4 = 3</math></p>  <p><math>12 \div 6 = 2</math></p>  <p><math>12 \div 2 = 6</math></p> 	<p>Understand how to relate division by grouping to repeated subtraction.</p>  <p>There are 4 groups now.</p> <p>12 divided into groups of 3. <math>12 \div 3 = 4</math></p> <p>There are 4 groups.</p>
<p><b>Using known times-tables to solve divisions</b></p> <p><b>Vocabulary:</b></p> <p>Times tables Pattern Groups Counting back Repeated subtraction Number line Bar model</p>	<p>Understand the relationship between multiplication facts and division.</p>  <p>4 groups of 5 cars is 20 cars in total. 20 divided by 4 is 5.</p>	<p>Link equal grouping with repeated subtraction and known times-table facts to support division.</p>  <p>40 divided by 4 is 10.</p> <p>Use a bar model to support understanding of the link between times-table knowledge and division.</p> 	<p>Relate times-table knowledge directly to division.</p> <p><math>1 \times 10 = 10</math>  <math>2 \times 10 = 20</math>  <math>3 \times 10 = 30</math>  <math>4 \times 10 = 40</math>  <math>5 \times 10 = 50</math>  <math>6 \times 10 = 60</math>  <math>7 \times 10 = 70</math>  <math>8 \times 10 = 80</math></p> <p>I used the 10 times-table to help me. <math>3 \times 10 = 30</math>.</p> <p>I know that 3 groups of 10 makes 30, so I know that 30 divided by 10 is 3.</p> <p><math>3 \times 10 = 30</math> so <math>30 \div 10 = 3</math></p>

# Years 3 & 4

	Concrete	Pictorial	Abstract
<b>Place value</b>	<b>All children will be taught:</b>		
<b>Understanding 100s</b>  <b>Vocabulary:</b>  Place value Ones Tens Hundreds Equal Groups Pattern Represent	Understand the cardinality of 100, and the link with 10 tens.  Use cubes to place into groups of 10 tens.  	count in steps of 100.  There are 100 sweets in each jar.  	Represent steps of 100 on a number line and a number track and count up to 1,000 and back to 0.  
<b>Understanding place value to 1,000</b>  <b>Vocabulary:</b>  Place value Ones Tens Hundreds Thousands Equal	Unitise 100s, 10s and 1s to build 3-digit numbers.  	Use equipment to represent numbers to 1,000.  	Represent the parts of numbers to 1,000 using a part-whole model.   $215 = 200 + 10 + 5$  Recognise numbers to 1,000 represented on a number line, including those between

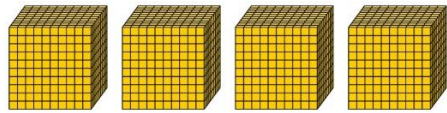
**Groups**  
**Pattern**  
**Represent**

**Understanding numbers to 10,000**

**Vocabulary:**

**Place value**  
**Ones**  
**Tens**  
**Hundreds**  
**Thousands**  
**Equal**  
**Groups**  
**Pattern**  
**Represent**

Use place value equipment to understand the place value of 4-digit numbers.



4 thousands equal 4,000.

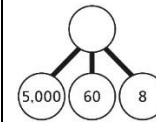
Represent numbers using place value counters once children understand the relationship between 1,000s and 100s.



$4,000 + 300 + 50 + 5 = 4,355$

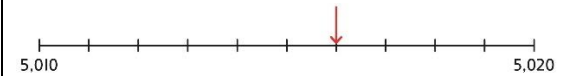
intervals.

Understand partitioning of 4-digit numbers, including numbers with digits of 0.



$5,000 + 60 + 8 = 5,068$

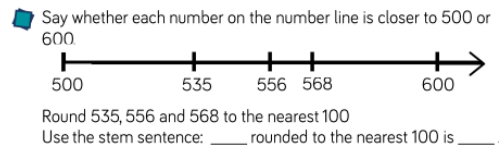
Understand and read 4-digit numbers on a number line.



**Round to the nearest 10/100/1000**

**Vocabulary:**

**Place value**  
**To the nearest**  
**Round up**  
**Round down**



Complete the table:

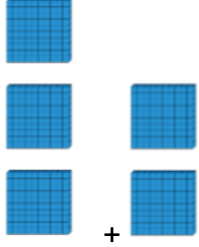
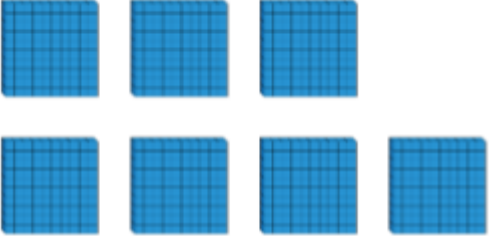
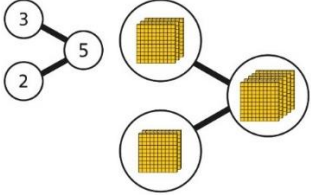
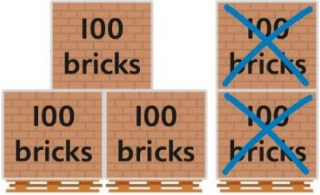
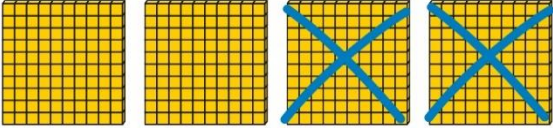
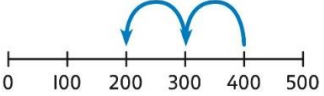
Start number	Rounded to the nearest 10
851	
XCVIII	

Round these numbers to the nearest 1,000

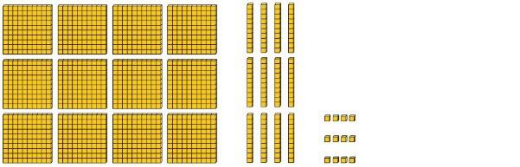
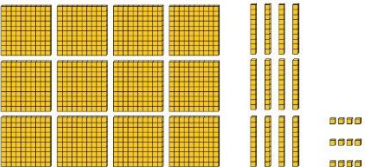









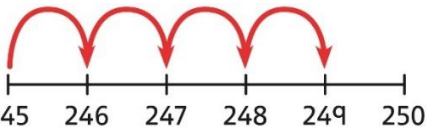




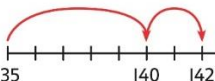
- Eight thousand and fifty-six
- 5 thousands, 5 hundreds, 5 tens and 5 ones
- 
- LXXXII

Complete the table.

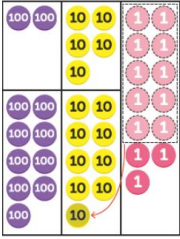

Start number	Rounded to the nearest 10	Rounded to the nearest 100	Rounded to the nearest 1,000
4,999			
LXXXII			

<p><b>Adding 100s</b></p> <p><u>Vocabulary:</u></p> <p>Place value Pattern Groups Counting on Addition</p>	<p>Use known facts and unitising to add multiples of 100.</p>  <p><math>3 + 2 = 5</math>  <i>3 hundreds + 2 hundreds = 5 hundreds</i>  <math>300 + 200 = 500</math></p>	<p>Use known facts and unitising to add multiples of 100.</p>  <p><math>3 + 4 = 7</math>  <i>3 hundreds + 4 hundreds = 7 hundreds</i>  <math>300 + 400 = 700</math></p>	<p>Use known facts and unitising to add multiples of 100.</p> <p>Represent the addition on a number line.</p> <p>Use a part-whole model to support unitising.</p>  <p><math>3 + 2 = 5</math>  <math>300 + 200 = 500</math></p>
<p><b>Subtracting 100s</b></p> <p><u>Vocabulary:</u></p> <p>Place value Pattern Groups Counting on Subtraction</p>	<p>Use known facts and unitising to subtract multiples of 100.</p>  <p><math>5 - 2 = 3</math>  <math>500 - 200 = 300</math></p>	<p>Use known facts and unitising to subtract multiples of 100.</p>  <p><math>4 - 2 = 2</math>  <math>400 - 200 = 200</math></p>	<p>Understand the link with counting back in 100s.</p>  <p><math>400 - 200 = 200</math></p> <p>Use known facts and unitising as efficient and accurate methods.      I know that <math>7 - 4 = 3</math>. Therefore, I know that <math>700 - 400 = 300</math>.</p>
<p><b>Multiplying by multiples of 10 and 100</b></p> <p><u>Vocabulary:</u></p>	<p>Use unitising and place value equipment to understand how to multiply by multiples of 1, 10 and 100.</p>	<p>Use unitising and place value equipment to understand how to multiply by multiples of 1, 10 and 100.</p>	<p>Use known facts and understanding of place value and commutativity to multiply mentally.</p> <p><math>4 \times 7 = 28</math>  <math>4 \times 70 = 280</math></p>

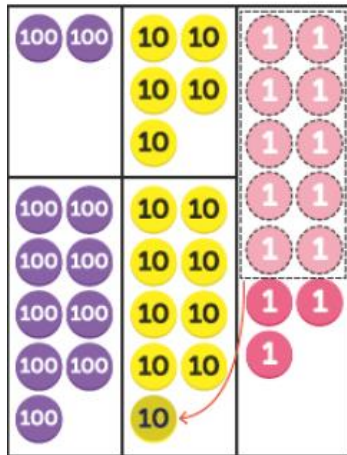


<p><b>Groups of Counting on Pattern Multiples Product Lots of</b></p>	 <p>3 groups of 4 ones is 12 ones. 3 groups of 4 tens is 12 tens. 3 groups of 4 hundreds is 12 hundreds.</p>	 <p><math>3 \times 4 = 12</math> <math>3 \times 40 = 120</math> <math>3 \times 400 = 1,200</math></p>	<p><math>40 \times 7 = 280</math> <math>4 \times 700 = 2,800</math> <math>400 \times 7 = 2,800</math></p>												
<p><b>Addition</b> All children will be taught the column method. Place value equipment will be used to represent additions and support mathematics where necessary. Other methods may also offer support to secure knowledge and skills. All children will be taught to add 1/10/100 without exchange and then add 1/10/100 with exchange</p>															
<p><b>Concrete</b></p>		<p><b>Pictorial</b></p>													
<p><b>3 / 4-digit number + 1s, no exchange or bridging</b></p> <p><u>Vocabulary:</u></p> <p>Addition Place value Sum Total Altogether Increase Counting on Greater</p>	<p>Use number bonds to add the 1s.</p>  <p><math>214 + 4 = ?</math></p> <p>Now there are 4 + 4 ones in total. <math>4 + 4 = 8</math></p> <p><math>214 + 4 = 218</math></p>	<p>Use number bonds to add the 1s.</p> <table border="1" data-bbox="887 675 1189 922"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>4</td> <td>9</td> </tr> </tbody> </table> <p>Use number bonds to add the 1s. <math>5 + 4 = 9</math></p> <p><math>245 + 4</math> <math>5 + 4 = 9</math></p> <p><math>245 + 4 = 249</math></p>	H	T	O							2	4	9	<p>Understand the link with counting on.</p> <p><math>245 + 4</math></p>  <p>Use number bonds to add the 1s and understand that this is more efficient and less prone to error.</p> <p><math>245 + 4 = ?</math></p> <p>I will add the 1s. <math>5 + 4 = 9</math> So, <math>245 + 4 = 249</math></p>
H	T	O													
															
															
2	4	9													
<p><b>3 / 4-digit number + 1s with exchange</b></p> <p><u>Vocabulary:</u></p>	<p>Understand that when the 1s sum to 10 or more, this requires an exchange of 10 ones for 1 ten.</p> <p>Children should explore this using unitised objects or physical apparatus.</p>	<p>Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding.</p>	<p>Understand how to bridge by partitioning to the 1s to make the next 10.</p> 												



<p><b>Addition</b> <b>Exchange</b> <b>Place value</b> <b>Sum</b> <b>Total</b> <b>Altogether</b> <b>Increase</b> <b>Counting on</b> <b>Greater</b></p>			<p><math>135 + 7 = ?</math>  <math>135 + 5 + 2 = 142</math> Ensure that children understand how to add 1s bridging a 100.</p> <p><math>198 + 5 = ?</math>  <math>198 + 2 + 3 = 203</math></p>
<p><b>3-digit number + 10s, no exchange</b></p> <p><u>Vocabulary:</u></p> <p><b>Addition</b> <b>Place value</b> <b>Sum</b> <b>Total</b> <b>Altogether</b> <b>Increase</b> <b>Counting on</b> <b>Greater</b></p>	<p>Calculate mentally by forming the number bond for the 10s.</p> <p>Add 9 to 3041.</p> $3041 + 9 = \square$ <p style="text-align: center;">↖ make 10</p> $3041 + 9 = 3040 + 10$  $3041 + 9 = 3050$	<p>Calculate mentally by forming the number bond for the 10s.</p> $98 + 4142 = \square$ <p style="text-align: center;">↖ make 100</p> $98 + 4142 = 100 + 4140$ $= 4240$	<p>Calculate mentally by forming the number bond for the 10s.</p> <p><math>753 + 40</math></p> <p><i>I know that <math>5 + 4 = 9</math></i></p> <p>So, <math>50 + 40 = 90</math>  <math>753 + 40 = 793</math></p>
<p><b>3-digit number + 2-digit / 3 digit number, exchange required</b></p> <p><u>Vocabulary:</u></p> <p><b>Addition</b> <b>Place value</b></p>	<p>Use place value equipment / grids to model addition and understand where exchange is required.</p>	<p>Use a column method with exchange. Children must understand how the method relates to place value at each stage of the calculation.</p>	

Sum  
Total  
Altogether  
Increase  
Counting on  
Greater  
Exchange  
Represent



There are 13 ones, so that is 1 ten and 3 ones. There are 14 tens so I will exchange.

$$\begin{array}{r} \text{H T O} \\ 275 \\ + 16 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H T O} \\ 275 \\ + 16 \\ \hline 91 \end{array}$$

$$\begin{array}{r} \text{H T O} \\ 275 \\ + 16 \\ \hline 291 \end{array}$$

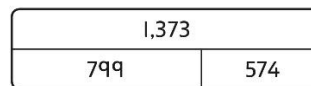
$$275 + 16 = 291$$

Representing  
additions and  
checking  
strategies

Vocabulary:

Check  
Prove  
Part-part-  
whole  
Bar models

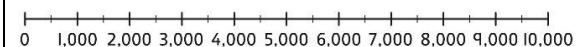
Bar models may be used to represent additions in problem contexts, and to justify mental methods where appropriate.



$$\begin{array}{r} \text{Th H T O} \\ 799 \\ + 574 \\ \hline 1373 \end{array}$$




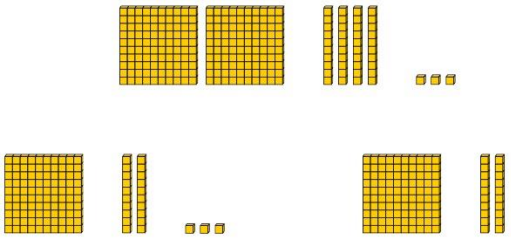

I chose to work out  $574 + 800$ , then subtract 1.

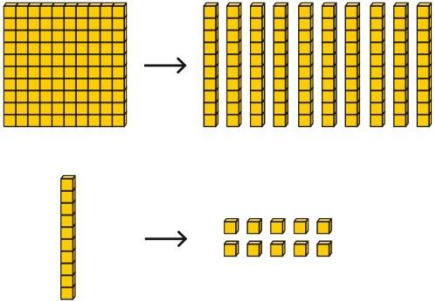
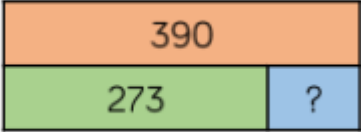
Use rounding and estimating on a number line to check the reasonableness of an addition.



$$912 + 6,149 = ?$$

I used rounding to work out that the answer should be approximately  $1,000 + 6,000 = 7,000$ .

Subtraction	All children will be taught column subtraction. Place value equipment will be used to represent subtractions and support mathematics where necessary. Other methods may also offer support to secure knowledge and skills. All children will be taught to subtract without exchange and then subtract with exchange														
	Concrete	Pictorial	Abstract												
<p><b>3-digit number – 1s, no exchange</b></p> <p><u>Vocabulary:</u></p> <p>Count back Fewer Minus Decrease Take (away) Less Subtract Subtraction</p>	<p>Use number bonds to subtract the 1s.</p>  <p>214 - 3 = ?</p>  <p>4 - 3 = 1 214 - 3 = 211</p>	<p>Use number bonds to subtract the 1s.</p> <table border="1" data-bbox="887 379 1144 531"> <tr><th>H</th><th>T</th><th>O</th></tr> <tr><td>3</td><td>1</td><td>9</td></tr> </table> <p>319 - 4 = ?</p> <table border="1" data-bbox="887 635 1144 786"> <tr><th>H</th><th>T</th><th>O</th></tr> <tr><td>3</td><td>1</td><td>9</td></tr> </table> <p>9 - 4 = 5                      319 - 4 = 315</p>	H	T	O	3	1	9	H	T	O	3	1	9	<p>Understand the link with counting back using a number line.</p> <p>132-4</p> 
H	T	O													
3	1	9													
H	T	O													
3	1	9													
<p><b>3-digit number – up to 3 / 4-digit number</b></p> <p><u>Vocabulary:</u></p> <p>Count back Fewer Minus Decrease Take (away) Less Subtract Subtraction Exchange</p>	<p>Use place value equipment to explore the effect of splitting a whole into two parts, and understand the link with taking away.</p> 	<p>Represent the calculation on a place value grid.</p> 	<p>Use column subtraction to calculate accurately and efficiently.</p> $\begin{array}{r} \text{H T O} \\ 999 \\ - 352 \\ \hline 7 \end{array}$ $\begin{array}{r} \text{H T O} \\ 999 \\ - 352 \\ \hline 47 \end{array}$ $\begin{array}{r} \text{H T O} \\ 999 \\ - 352 \\ \hline 647 \end{array}$												

<p><b>3-digit number – up to 3-digit number, exchange required</b></p> <p><u>Vocabulary:</u></p> <p>Count back Fewer Minus Decrease Take (away) Less Subtract Subtraction Exchange</p>	<p>Use equipment to exchange 1 hundred for 10 tens, and 1 ten for 10 ones.</p> 	<p><i>Model the required exchange on a place value grid.</i></p> <p><math>175 - 38 = ?</math> I need to subtract 8 ones, so I will exchange a ten for 10 ones.</p>	<p>Use column subtraction to work accurately and efficiently.</p> $\begin{array}{r} \text{H T O} \\ 1 \overset{\times}{7} 5 \\ - 38 \\ \hline 137 \end{array}$ <p><math>175 - 38 = 137</math></p>
<p><b>Representing subtraction problems</b></p> <p><u>Vocabulary:</u></p> <p>Part-part-whole Represent Prove Check</p>		<p>Use bar models to represent subtractions.</p> <p>'Find the difference' is represented as two bars for comparison.</p>  <p>Bar models can also be used to show that a part must be taken away from the whole.</p>	<p>Children use alternative representations to check calculations and choose efficient methods.</p> <p>Children use inverse operations to check additions and subtractions.</p> $\begin{array}{r} \text{H T O} \\ 270 \\ + 255 \\ \hline 525 \end{array}$ <p>I will check using addition.</p>
<p><b>Multiplication All children will be taught times tables to 12x12 and begin with formal written methods for short multiplication</b></p>			
<p><b>Concrete</b></p>		<p><b>Pictorial</b></p>	<p><b>Abstract</b></p>
<p><b>Understanding equal grouping</b></p>	<p>Children continue to build understanding of equal groups and the</p>	<p>Children recognise that arrays demonstrate commutativity.</p>	<p>Children understand the link between repeated addition and multiplication.</p>

and repeated addition

Using commutativity to support understanding of the times-tables

Vocabulary:

Groups of  
Counting on  
Pattern  
Multiples  
Product  
Lots of  
Commutative  
Bar Model

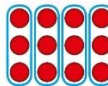
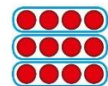
relationship with repeated addition.



Children recognise that arrays can be used to model commutative multiplications.

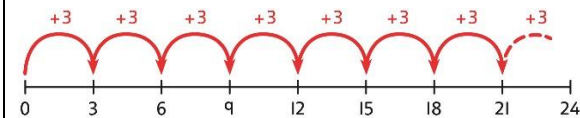


I can see 2 groups of 6.  
I can see 6 groups of 2.  
 $2 \times 6 = 12$     $6 \times 2 = 12$



This is 3 groups of 4.  
This is 4 groups of 3.

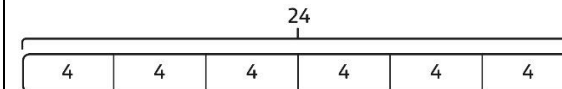
$3 \times 4 = 12$   
 $4 \times 3 = 12$



8 groups of 3 is 24.

$3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24$   
 $8 \times 3 = 24$

A bar model may represent multiplications as equal groups.



$6 \times 4 = 24$

Learning and understanding times-tables up to  $12 \times 12$

Vocabulary:

Groups of  
Pattern  
Multiples  
Product  
Lots of  
Commutative

Learn times tables to  $12 \times 12$

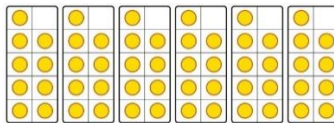
Understand the special cases of multiplying by 1 and 0.



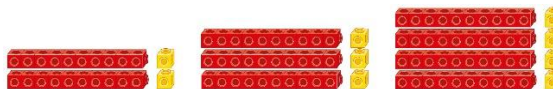
$5 \times 1 = 5$

$5 \times 0 = 0$

Represent the relationship between the  $\times 9$  table and the  $\times 10$  table.



Represent the  $\times 11$  table and  $\times 12$  tables in relation to the  $\times 10$  table.



Understand how times-tables relate to counting patterns.

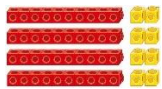
Understand links between the  $\times 3$  table,  $\times 6$  table and  $\times 9$  table  
 $5 \times 6$  is double  $5 \times 3$

$\times 5$  table and  $\times 6$  table  
I know that  $7 \times 5 = 35$   
so I know that  $7 \times 6 = 35 + 7$ .

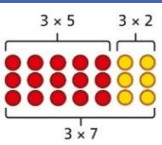
$\times 5$  table and  $\times 7$  table  
 $3 \times 7 = 3 \times 5 + 3 \times 2$

**Repeated addition**

$2 \times 11 = 20 + 2$   
 $3 \times 11 = 30 + 3$   
 $4 \times 11 = 40 + 4$



$4 \times 12 = 40 + 8$



$6 \times 10 = 60$   
 $6 \times 9 = 60 - 6$

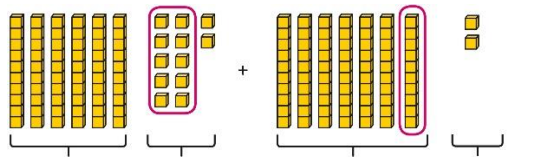
**Multiplying a 2-digit number by a 1-digit number, expanded column method**

**Vocabulary:**

Place value  
Pattern  
Multiples  
Product  
Lots of

Use place value equipment to model how 10 ones are exchanged for a 10 in some multiplications.

$3 \times 24 = ?$   
 $3 \times 20 = 60$   
 $3 \times 4 = 12$



$3 \times 24 = 60 + 12$   
 $3 \times 24 = 70 + 2$   
 $3 \times 24 = 72$

Understand that multiplications may require an exchange of 1s for 10s, and also 10s for 100s.

$4 \times 23 = ?$   
 $4 \times 20 = 80$   
 $4 \times 3 = 12$   
 $4 \times 23 = 92$

Short multiplication method

	T	O
	3	4
x		5
<hr/>		
1	7	0

1 2

**Column multiplication for 2- and 3-digit numbers multiplied by a single digit**

**Vocabulary:**

Use place value equipment to make multiplications.  $26 \times 3$

Tens	Ones


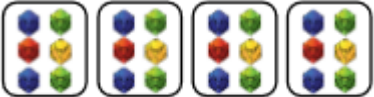
There are  $3 \times 6$  ones... 18 ones

Use place value equipment alongside a column method for multiplication of up to 3-digit numbers by a single digit.

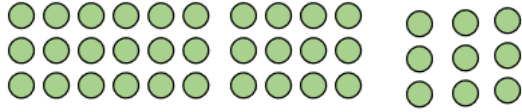
Use the formal column method for up to 3-digit numbers multiplied by a single digit.

3	1	2
x		3
<hr/>		
9	3	6



<b>Place value</b> <b>Pattern</b> <b>Multiples</b> <b>Product</b> <b>Lots of</b>	There are $3 \times 2$ tens ...      6 tens $18 + 60 = 78$	<table border="1" style="display: inline-table; margin-right: 10px;"> <tr><th colspan="2">Tens</th><th colspan="2">Ones</th></tr> <tr><td>10</td><td>10</td><td>10</td><td>10</td></tr> <tr><td>10</td><td>10</td><td>10</td><td>10</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td></td><td>3</td><td>4</td></tr> <tr><td>x</td><td></td><td>2</td></tr> <tr><td></td><td>6</td><td>8</td></tr> </table>	Tens		Ones		10	10	10	10	10	10	10	10		T	O		3	4	x		2		6	8	
Tens		Ones																									
10	10	10	10																								
10	10	10	10																								
	T	O																									
	3	4																									
x		2																									
	6	8																									
<b>Division</b>	<b>All children will be taught short division method (bus stop)</b>																										
	<b>Concrete</b>	<b>Concrete</b>	<b>Concrete</b>																								
<b>Understanding the relationship between multiplication and division, including times-tables</b>  <u>Vocabulary:</u>  <b>Groups</b> <b>Share</b> <b>Share equally</b> <b>Place value</b> <b>Repeated subtraction</b> <b>Divide</b> <b>Remainder</b> <b>Factors</b> <b>Divisible</b> <b>Bar model</b>	Use objects to explore families of multiplication and division facts.   $12 \div 3 = 4$ $3 = 12 \div 4$ $12 = 4 \times 3$ $3 \times 12 = 4$ $3 \div 4 = 12$ $3 \times 4 = 12$	Represent divisions using an array.    $24 \div 4 = 6$	Understand families of related multiplication and division facts.  <i>I know that <math>5 \times 7 = 35</math></i>  <i>so I know all these facts:</i>  $5 \times 7 = 35$ $7 \times 5 = 35$ $35 = 5 \times 7$ $35 = 7 \times 5$ $35 \div 5 = 7$ $35 \div 7 = 5$ $7 = 35 \div 5$ $5 = 35 \div 7$																								
<b>Dividing 2-digit and 3-digit numbers by a</b>	Partition into 10s and 1s to divide where appropriate.  $39 \div 3 = ?$		Partition into 100s, 10s and 1s using a part-whole model to divide where appropriate.																								

single digit by partitioning into 100s, 10s and 1s



$$39 = 30 + 9$$

**Vocabulary:**

- Groups
- Share
- Share equally
- Place value
- Repeated subtraction
- Divide
- Remainder
- Factors
- Divisible
- Partition

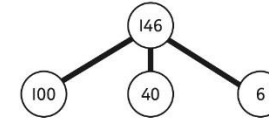
$$30 \div 3 = 10$$

$$9 \div 3 = 3$$

$$39 \div 3 = 13$$

Use Base 10 equipment to divide where appropriate.

$$142 \div 2 = ?$$



$$100 \div 2 = \square \quad 40 \div 2 = \square \quad 6 \div 2 = \square$$

$$100 \div 2 = 50$$

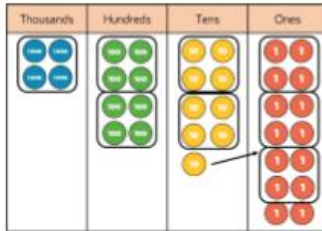
$$40 \div 2 = 20$$

$$6 \div 2 = 3$$

$$50 + 20 + 3 = 73$$

$$142 \div 2 = 73$$

Dividing 2-digit and 3-digit numbers by a single digit, using short division

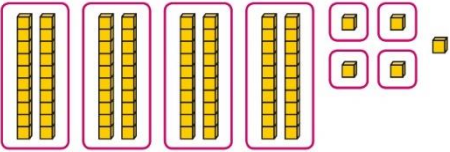
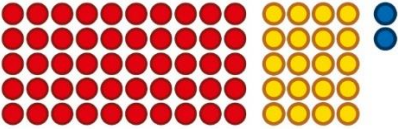


	1	2	2	3		
4	4	8	9	4	r2	

**Vocabulary:**

- Groups
- Share
- Share equally
- Place value
- Repeated subtraction
- Divide
- Remainder

	1	2	2	3		
4	4	8	9	4	r2	

<b>Factors</b> <b>Divisible</b> <b>Partition</b>			
<b>Understanding remainders</b>  <u><b>Vocabulary:</b></u>  <b>Groups</b> <b>Share</b> <b>Share equally</b> <b>Place value</b> <b>Repeated subtraction</b> <b>Divide</b> <b>Remainder</b> <b>Factors</b> <b>Divisible</b> <b>Partition</b>	<p>Use place value equipment to find remainders.</p> <p><i>85 shared into 4 equal groups There are 24, and 1 that cannot be shared.</i></p> 	<p>Represent the remainder as the part that cannot be shared equally.</p>  <p><math>72 \div 5 = 14 \text{ remainder } 2</math></p>	<p>Understand how partitioning can reveal remainders of divisions.</p> <p><math>80 \div 4 = 20</math>  <math>12 \div 4 = 3</math>  <math>95 \div 4 = 23 \text{ remainder } 3</math></p>

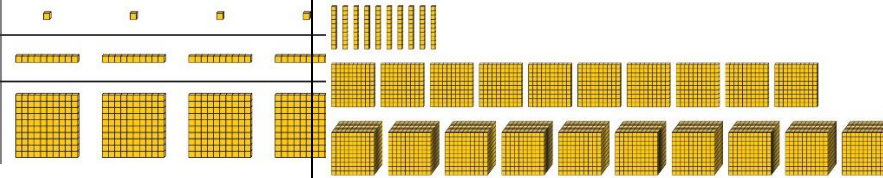
# Years 5&6

	Concrete	Pictorial	Abstract
<b>Place value</b>			
<b>Multiplying by 10, 100 and 1,000</b>	Use place value equipment to multiply by 10, 100 and 1,000 by unitising.	Understand the effect of repeated multiplication by 10.	Understand how exchange relates to the digits when multiplying by 10, 100 and 1,000.

**Vocabulary:**

**Groups of Pattern  
Multiples  
Product  
Lots of  
Commutative  
Bar Model  
Repeated  
addition**

$4 \times 1 = 4 \text{ ones} = 4$   
 $4 \times 10 = 4 \text{ tens} = 40$   
 $4 \times 100 = 4 \text{ hundreds} = 400$



H	T	O
	1	7

$17 \times 10 = 170$   
 $17 \times 100 = 17 \times 10 \times 10 = 1,700$   
 $17 \times 1,000 = 17 \times 10 \times 10 \times 10 = 17,000$

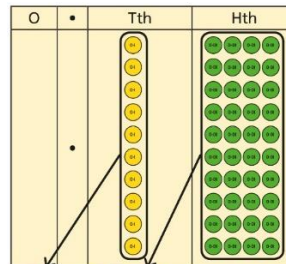
**Multiplying decimals by 10, 100 and 1,000**

**Vocabulary:**

**Place value  
Groups of  
Pattern  
Multiples  
Product  
Lots of  
Repeated  
addition**

Use place value equipment to explore and understand the exchange of 10 tenths, 10 hundredths or 10 thousandths.

Represent multiplication by 10 as exchange on a place value grid.



$0.14 \times 10 = 1.4$

Understand how this exchange is represented on a place value chart.

$2.5 \times 10 = 25$   
 $2.5 \times 100 = 250$   
 $2.5 \times 1,000 = 2,500$

Th	H	T	O	.	Tth
			2	.	5
		2	5	.	
	2	5	0	.	
2	5	0	0	.	

**Multiplying by 10, 100 and 1,000**

Use place value equipment to explore exchange in decimal multiplication.

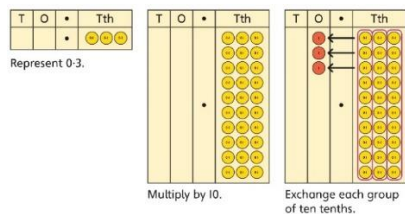
Understand how the exchange affects decimal numbers on a place value grid.

Use knowledge of multiplying by 10, 100 and 1,000 to multiply by multiples of 10, 100 and 1,000.

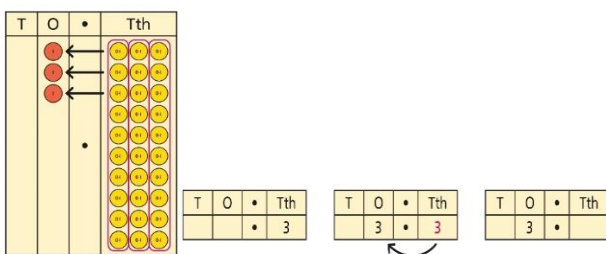
$8 \times 100 = 800$

**Vocabulary:**

**Groups of Pattern**  
**Place value**  
**Multiples**  
**Product**  
**Lots of Commutative**  
**Bar Model**



$0.3 \times 10 = ?$   
 $0.3$  is 3 tenths.  
 $10 \times 3$  tenths are 30 tenths.  
 30 tenths are equivalent to 3 ones.



$8 \times 300 = 800 \times 3$   
 $= 2,400$

$2.5 \times 10 = 25$   
 $2.5 \times 20 = 2.5 \times 10 \times 2$   
 $= 50$

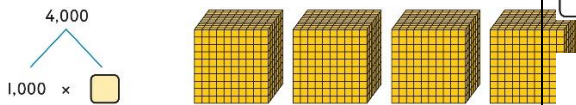
**Dividing whole numbers by 10, 100 and 1,000**

**Vocabulary:**

**Groups of Pattern**  
**Place value**  
**Factors**  
**Times tables**

Use place value equipment to support unitising for division.

$4,000 \div 1,000$



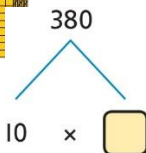
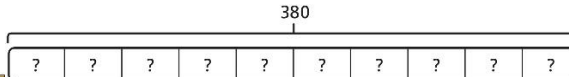
$4,000$  is 4 thousands.

$4 \times 1,000 = 4,000$

So,  $4,000 \div 1,000 = 4$

Use a bar model to support dividing by unitising.

$380 \div 10 = 38$



$380$  is 38 tens.

$38 \times 10 = 380$

$10 \times 38 = 380$

So,  $380 \div 10 = 38$

Understand how and why the digits change on a place value grid when dividing by 10, 100 or 1,000.

Th	H	T	O
3	2	0	0

$3,200 \div 100 = ?$

$3,200$  is 3 thousands and 2 hundreds.

$200 \div 100 = 2$

$3,000 \div 100 = 30$

$3,200 \div 100 = 32$

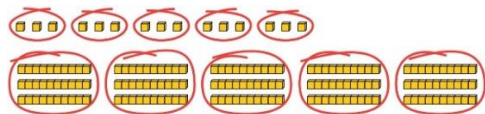
So, the digits will move two places to the right.

**Dividing by multiples of 10, 100 and 1,000**

**Vocabulary:**

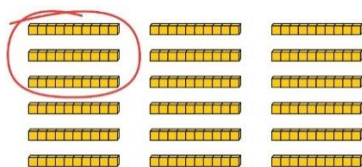
**Groups of Pattern**  
**Place value**

Use place value equipment to represent known facts and unitising.



15 ones put into groups of 3 ones.  
 There are 5 groups.

Represent related facts with place value equipment when dividing by unitising.



$180$  is 18 tens.

Reason from known facts, based on understanding of unitising. Use knowledge of the inverse relationship to check.

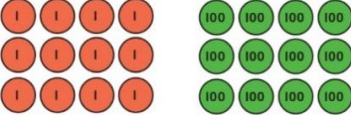
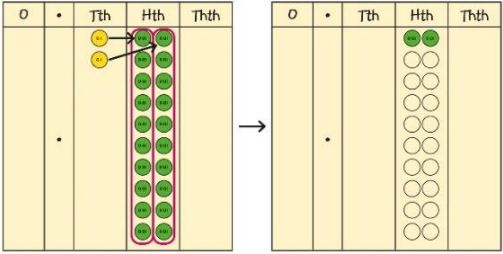
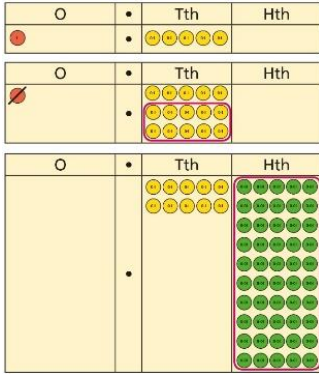
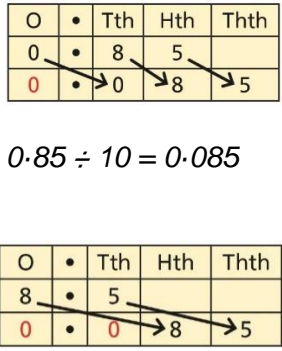
$3,000 \div 5 = 600$

$3,000 \div 50 = 60$




$3,000 \div 500 = 6$

$5 \times 600 = 3,000$

$50 \times 60 = 3,000$

<p><b>Factors</b> <b>Times tables</b></p>	<p><math>15 \div 3 = 5</math></p> <p>15 tens put into groups of 3 tens. There are 5 groups.</p> <p><math>150 \div 30 = 5</math></p>	<p>18 tens divided into groups of 3 tens. There are 6 groups.</p> <p><math>180 \div 30 = 6</math></p>  <p>12 ones divided into groups of 4. There are 3 groups.</p> <p>12 hundreds divided into groups of 4 hundreds. There are 3 groups.</p> <p><math>1200 \div 400 = 3</math></p>	<p><math>500 \times 6 = 3,000</math></p> <p>Use knowledge of factors to divide by multiples of 10, 100 and 1,000.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <math>40 \div 50 = \square</math> </div> <p><math>40 \rightarrow \boxed{\div 10} \rightarrow \boxed{\div 5} \rightarrow ?</math></p> <p><math>40 \rightarrow \boxed{\div 5} \rightarrow \boxed{\div 10} \rightarrow ?</math></p> <p><math>40 \div 5 = 8</math> <math>8 \div 10 = 0.8</math></p> <p>So, <math>40 \div 50 = 0.8</math></p>
<p><b>Dividing decimals by 10, 100 and 1,000</b></p> <p><b>Vocabulary:</b></p> <p><b>Groups of Pattern</b></p> <p><b>Place value</b></p> <p><b>Factors</b></p> <p><b>Times tables</b></p>	<p>Understand division by 10 using exchange.</p> <p>2 ones are 20 tenths.</p> <p>20 tenths divided by 10 is 2 tenths.</p> <p>Use place value equipment to explore division as exchange.</p>  <p>Exchange each 0.1 for ten 0.01s.      Divide 20 counters by 10.</p> <p><math>0.2</math> is 2 tenths.</p>	<p>Represent division using exchange on a place value grid.</p>  <p><math>1.5</math> is 1 one and 5 tenths. This is equivalent to 10 tenths and 50 hundredths.</p> <p>10 tenths divided by 10 is 1 tenth. 50 hundredths divided by 10 is 5 hundredths. <math>1.5</math> divided by 10 is 1 tenth and 5 hundredths.</p>	<p>Understand the movement of digits on a place value grid.</p>  <p><math>0.85 \div 10 = 0.085</math></p> <p><math>8.5 \div 100 = 0.085</math></p>



	<p>2 tenths is equivalent to 20 hundredths. 20 hundredths divided by 10 is 2 hundredths.</p>	<p><math>1.5 \div 10 = 0.15</math></p>																																	
<p><b>Round to the nearest 10 / 100 / 1000 / 10,000</b></p> <p><b><u>Vocabulary:</u></b></p> <p><b>Place value</b> <b>To the nearest</b> <b>Round up</b> <b>Round down</b> <b>Place value</b></p>	<table border="1" data-bbox="338 272 884 432"> <thead> <tr> <th>TTh</th> <th>Th</th> <th>H</th> <th>T</th> <th>C</th> </tr> </thead> <tbody> <tr> <td></td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> </tr> <tr> <td></td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> </tr> <tr> <td></td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> </tr> </tbody> </table> <p>use place value chart to round to the nearest 100, 1000, 10,000</p>	TTh	Th	H	T	C		●●●●	●●●●	●●●●	●●●●		●●●●	●●●●	●●●●	●●●●		●●●●	●●●●	●●●●	●●●●	<p>Complete the table.</p> <table border="1" data-bbox="902 288 1391 520"> <thead> <tr> <th>Start Number</th> <th>Rounded to the nearest 10</th> <th>Rounded to the nearest 100</th> <th>Rounded to the nearest 1,000</th> </tr> </thead> <tbody> <tr> <td>  </td> <td></td> <td></td> <td></td> </tr> <tr> <td>DCCLXIX</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Round 85,617</p> <ul style="list-style-type: none"> <li>To the nearest 10</li> <li>To the nearest 100</li> <li>To the nearest 1,000</li> <li>To the nearest 10,000</li> </ul>	Start Number	Rounded to the nearest 10	Rounded to the nearest 100	Rounded to the nearest 1,000					DCCLXIX				<p><b>Round to the nearest 10 / 100 / 1000 / 10,000</b></p>
TTh	Th	H	T	C																															
	●●●●	●●●●	●●●●	●●●●																															
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Start Number	Rounded to the nearest 10	Rounded to the nearest 100	Rounded to the nearest 1,000																																
																																			
DCCLXIX																																			
<p><b>Addition</b></p>	<p><b>All children will be taught: column addition</b> <b>Place value equipment will be used to represent additions and support mathematics where necessary</b></p>																																		

**Column addition with whole numbers**

**Y6: Comparing and selecting efficient methods**

**Adding decimals using column addition**

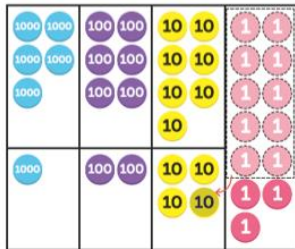
**Y6: Comparing and selecting efficient methods**

**Vocabulary:**

**Addition  
Place value  
Sum  
Total  
Altogether  
Increase  
Counting on  
Greater**

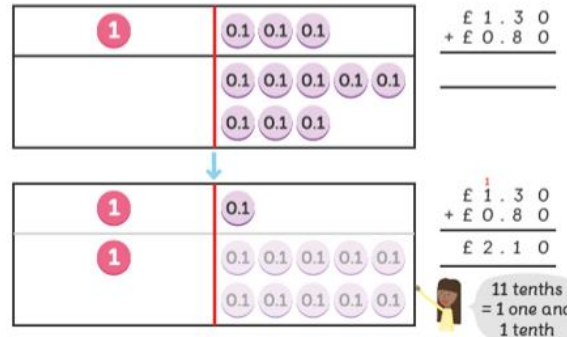
**Selecting mental methods for larger numbers where**

Use place value equipment to represent additions.



$$\begin{array}{r} 5 \ 6 \ 7 \ 8 \\ + 1 \ 2 \ 3 \ 5 \\ \hline \end{array}$$

Represent additions, using place value equipment on a place value grid alongside written methods.



$$\begin{array}{r} £ \ 1 \ . \ 3 \ 0 \\ + £ \ 0 \ . \ 8 \ 0 \\ \hline \end{array}$$

$$\begin{array}{r} £ \ 1 \ . \ 3 \ 0 \\ + £ \ 0 \ . \ 8 \ 0 \\ \hline £ \ 2 \ . \ 1 \ 0 \end{array}$$

Use column addition, including exchanges.

$$\begin{array}{r} \text{TTh} \ \text{Th} \ \text{H} \ \text{T} \ \text{O} \\ 1 \ 9 \ 1 \ 7 \ 5 \\ + 1 \ 8 \ 4 \ 1 \ 7 \\ \hline 3 \ 7 \ 5 \ 9 \ 2 \end{array}$$

Add using a column method, ensuring that children understand the link with place value.

$$\begin{array}{r} \text{O} \cdot \text{Tth} \ \text{Hth} \\ 0 \cdot 2 \ 3 \\ + 0 \cdot 4 \ 5 \\ \hline 0 \cdot 6 \ 8 \end{array}$$

$$\begin{array}{r} \text{O} \cdot \text{Tth} \ \text{Hth} \\ 0 \cdot 9 \ 2 \\ + 0 \cdot 3 \ 3 \\ \hline 1 \cdot 2 \ 5 \end{array}$$

Include exchange where required, alongside an understanding of place value. Include additions where the numbers of decimal places are different.

$$\begin{array}{r} \text{O} \cdot \text{Tth} \ \text{Hth} \\ 3 \cdot 4 \ 0 \\ + 0 \cdot 6 \ 5 \\ \hline \end{array}$$

$$3.4 + 0.65 = ?$$

Represent 7-digit numbers on a place value grid, and use this to support thinking and mental methods.

Use a bar model to support thinking in addition problems.

$$257,000 + 99,000 = ?$$

Use place value and unitising to support mental calculations with larger numbers.

$$195,000 + 6,000 = ?$$

appropriate



**Vocabulary:**

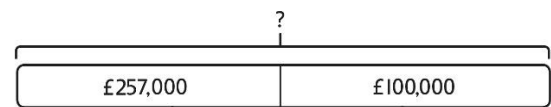
**Addition**  
**Place value**  
**Sum**  
**Total**  
**Altogether**  
**Increase**  
**Counting on**  
**Greater**

$2,411,301 + 500,000 = ?$

*This would be 5 more counters in the HTh place.*

*So, the total is 2,911,301.*

$2,411,301 + 500,000 = 2,911,301$



*I added 100 thousands then subtracted 1 thousand.*

$257 \text{ thousands} + 100 \text{ thousands} = 357 \text{ thousands}$

$257,000 + 100,000 = 357,000$   
 $357,000 - 1,000 = 356,000$

*So,  $257,000 + 99,000 = 356,000$*

$195 + 5 + 1 = 201$

*195 thousands + 6 thousands = 201 thousands*

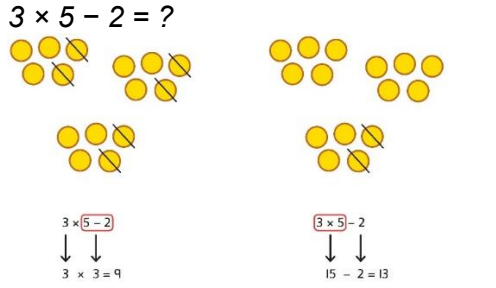
*So,  $195,000 + 6,000 = 201,000$*

**Understanding order of operations in calculations**

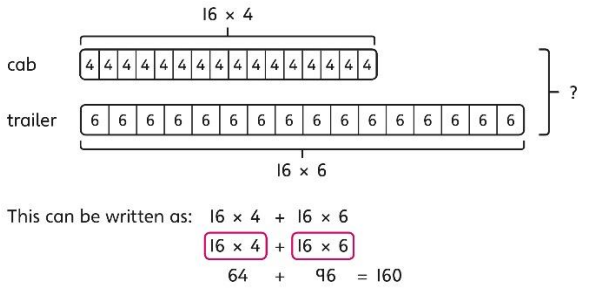
**Vocabulary:**

**Brackest**  
**Indices**  
**Division**  
**Multiplication**  
**Addition**  
**Subtraction**

Use equipment to model different interpretations of a calculation with more than one operation. Explore different results.



Model calculations using a bar model to demonstrate the correct order of operations in multi-step calculations.



Understand the correct order of operations in calculations without brackets.

Understand how brackets affect the order of operations in a calculation.

$4 + 6 \times 16$   
 $4 + 96 = 100$

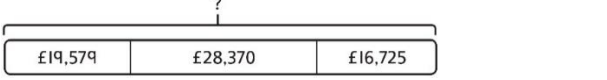
$(4 + 6) \times 16$   
 $10 \times 16 = 160$

**Other representations and methods may include:**

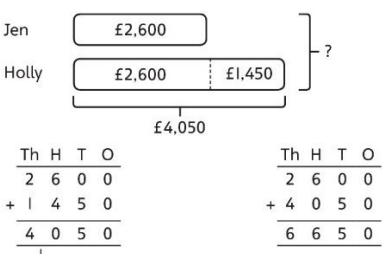

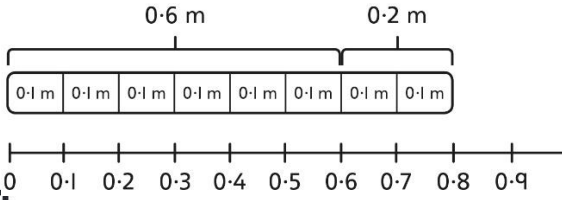
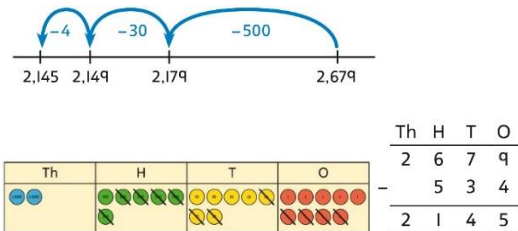
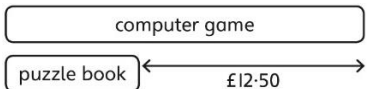
**Representing additions**



Bar models represent addition of two or more numbers in the context of problem solving.



Use approximation to check whether answers are reasonable.

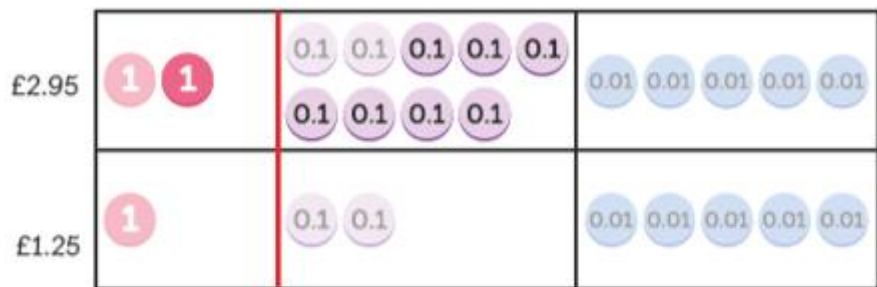
<p><b>Vocabulary:</b></p> <p><b>Bar model</b></p>			<table border="0"> <tr> <td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td> <td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td> </tr> <tr> <td>2</td><td>3</td><td>4</td><td>0</td><td>5</td> <td>2</td><td>3</td><td>4</td><td>0</td><td>5</td> </tr> <tr> <td>+</td><td>7</td><td>8</td><td>9</td><td>2</td> <td>+</td><td>7</td><td>8</td><td>9</td><td>2</td> </tr> <tr> <td colspan="5"><hr/></td> <td colspan="5"><hr/></td> </tr> <tr> <td>2</td><td>0</td><td>2</td><td>9</td><td>7</td> <td>3</td><td>1</td><td>2</td><td>9</td><td>7</td> </tr> <tr> <td colspan="5"><hr/></td> <td colspan="5"><hr/></td> </tr> </table> <p><i>I will use 23,000 + 8,000 to check.</i></p>	TTh	Th	H	T	O	TTh	Th	H	T	O	2	3	4	0	5	2	3	4	0	5	+	7	8	9	2	+	7	8	9	2	<hr/>					<hr/>					2	0	2	9	7	3	1	2	9	7	<hr/>					<hr/>				
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+	7	8	9	2	+	7	8	9	2																																																						
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2	0	2	9	7	3	1	2	9	7																																																						
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<p><b>Adding tenths</b></p> <p><b>Vocabulary:</b></p> <p><b>Number line</b></p> <p><b>Bar Model</b></p>	<p>Link measure with addition of decimals.</p> <p><i>Two lengths of fencing are 0.6 m and 0.2 m. How long are they when added together?</i></p> 	<p>Use a bar model with a number line to add tenths.</p>  <p><math>0.6 + 0.2 = 0.8</math> 6 tenths + 2 tenths = 8 tenths</p>	<p>Understand the link with adding fractions.</p> $\frac{6}{10} + \frac{2}{10} = \frac{8}{10}$ <p>6 tenths + 2 tenths = 8 tenths <math>0.6 + 0.2 = 0.8</math></p>																																																												
<p><b>Subtraction</b></p>	<p>All children will be taught: column subtraction</p>																																																														
	<p><b>Concrete</b></p>	<p><b>Pictorial</b></p>	<p><b>Abstract</b></p>																																																												
<p><b>Column subtraction with whole numbers</b></p> <p><b>By Y6: Comparing and selecting efficient methods</b></p> <p><b>Vocabulary:</b></p>	<p>By Y6 compare subtraction methods alongside place value representations.</p>  <p>Use a bar model to represent calculations, including 'find the difference' with two bars as comparison.</p> 		<p>Use column subtraction methods with exchange where required.</p> <table border="0"> <tr> <td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td> </tr> <tr> <td>5</td><td>8</td><td>1</td><td>0</td><td>9</td> </tr> <tr> <td>-</td><td>1</td><td>8</td><td>5</td><td>3</td> </tr> <tr> <td colspan="5"><hr/></td> </tr> <tr> <td>4</td><td>3</td><td>5</td><td>6</td><td>3</td> </tr> </table> <p><math>62,097 - 18,534 = 43,563</math></p>	TTh	Th	H	T	O	5	8	1	0	9	-	1	8	5	3	<hr/>					4	3	5	6	3																																			
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4	3	5	6	3																																																											

Exchange

Subtracting decimals

Vocabulary:

Count back  
Fewer  
Minus  
Decrease  
Take (away)  
Less  
Subtract  
Subtraction  
Exchange



£2.95 - £1.25 =

Use column subtraction, with an understanding of place value, including subtracting numbers with different numbers of decimal places.

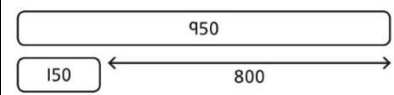
$3.921 - 3.75 = ?$

	0	·	Tth	Hth	Thth
	3	·	9	2	1
-	3	·	7	5	0
	<hr/>				
	<hr/>				

**Subtracting mentally with larger numbers**

Use a bar model to show how unitising can support mental calculations.

$950,000 - 150,000$   
 That is 950 thousands - 150 thousands



So, the difference is 800 thousands.  
 $950,000 - 150,000 = 800,000$

**Vocabulary:**

- Count back
- Fewer
- Minus
- Decrease
- Take (away)
- Less
- Subtract
- Subtraction
- Exchange
- Bridging

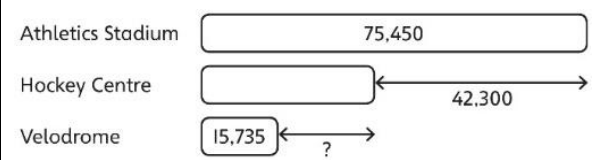
Subtract efficiently from powers of 10.

$10,000 - 500 = ?$

**Other representations and methods may include:**

**Checking strategies and representing subtractions**

Bar models represent subtractions in problem contexts, including 'find the difference'.



**Vocabulary:**

- Prove
- Check
- Represent

Children can explain the mistake made when the columns have not been ordered correctly.

Bello's working					Correct method				
T	H	H	T	O	T	H	H	T	O
1	7	8	7	7	1	7	8	7	7
+	4	0	1	2	+	4	0	1	2
5	7	9	9	7	2	1	8	8	9

Use approximation to check calculations.

*I calculated  $18,000 + 4,000$  mentally to check my subtraction.*

**Choosing efficient methods**

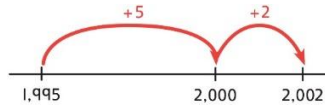
To subtract two large numbers that are close, children find the difference by counting on.

$2,002 - 1,995 = ?$



**Vocabulary:**

**Prove  
Check  
Represent**



Use addition to check subtractions.  
*I calculated  $7,546 - 2,355 = 5,191$ .  
I will check using the inverse.*

**Multiplication**

**By year 5: All children should know or learn all multiplication facts to 12x12. Where they don't this will be taught and given as home learning.**

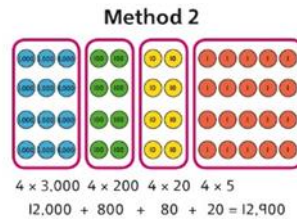
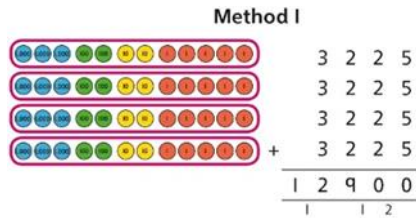
**All children will be taught: short and long multiplication methods**

**Multiplying up to 4-digit numbers by a single digit**

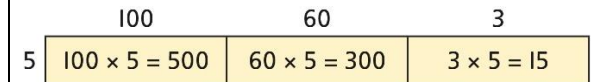
**Vocabulary:**

**Groups of  
Pattern  
Multiples  
Product  
Lots of  
Commutative  
Bar Model  
Repeated  
addition  
Array**

By Y6 use place value & equipment to compare methods



Use an area model and then add the parts.



Use a column multiplication, including any required exchanges.

$$\begin{array}{r} 136 \\ \times \quad 6 \\ \hline 816 \\ \underline{\quad 23} \\ \hline \end{array}$$

By Y6 use efficient strategies

**Multiplying 2-digit numbers by 2-digit numbers**

Use column multiplication, ensuring understanding of place value at each stage.

$$\begin{array}{r} 34 \\ \times 27 \\ \hline 238 \\ \hline \end{array} \quad 34 \times 7$$

$$\begin{array}{r} 34 \\ \times 27 \\ \hline 238 \\ 680 \\ \hline \end{array} \quad \begin{array}{l} 34 \times 7 \\ 34 \times 20 \end{array}$$

$$\begin{array}{r} 34 \\ \times 27 \\ \hline 238 \\ 680 \\ \hline 918 \\ \hline \end{array} \quad \begin{array}{l} 34 \times 7 \\ 34 \times 20 \\ 34 \times 27 \end{array}$$

**Vocabulary:**

- Groups of
- Pattern
- Multiples
- Product
- Lots of
- Commutative
- Bar Model
- Repeated addition

**Multiplying up to 4-digits by 2-digits**

Use column multiplication, ensuring understanding of place value at each stage.

$$\begin{array}{r} 143 \\ \times 12 \\ \hline 286 \\ 1430 \\ \hline 1716 \\ \hline \end{array} \quad \begin{array}{l} 143 \times 2 \\ 143 \times 10 \\ 143 \times 12 \end{array}$$

$$\begin{array}{r} 1274 \\ \times 32 \\ \hline 2548 \\ 38220 \\ \hline 40768 \\ \hline \end{array} \quad \begin{array}{l} 1,274 \times 2 \\ 1,274 \times 30 \\ 1,274 \times 32 \end{array}$$

$$1,274 \times 32 = 40,768$$

**Vocabulary:**

- Groups of
- Pattern
- Multiples
- Product
- Lots of
- Commutative
- Bar Model
- Repeated addition

**Multiplying decimals**

Use known facts to multiply decimals.

$4 \times 3 = 12$   
 $4 \times 0.3 = 1.2$   
 $4 \times 0.03 = 0.12$

**Vocabulary:**

**Groups of Pattern Multiples Product Lots of Commutative Bar Model Repeated addition**

$20 \times 5 = 100$   
 $20 \times 0.5 = 10$   
 $20 \times 0.05 = 1$

Find families of facts from a known multiplication.

*I know that  $18 \times 4 = 72$ .*

*This can help me work out:*

$1.8 \times 4 = ?$   
 $18 \times 0.4 = ?$   
 $180 \times 0.4 = ?$   
 $18 \times 0.04 = ?$

	H	T	O	•	Tth	Hth
$2 \times 3$			6	•		
$0.2 \times 3$			0	•	6	
$0.02 \times 3$				•		

Use a place value grid to understand the effects of multiplying decimals.

**Other representations and methods may include:**

**Understanding factors**

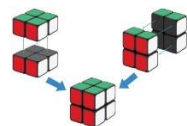
Use Cuisenaire, cubes or counters to explore the meaning of 'square numbers'.

**Vocabulary:**

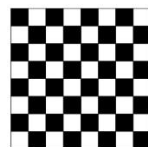
*25 is a square number because it is made from 5 rows of 5.*

**Times tables Representation Lots of Groups of Total Multiplication Division**

Use cubes to explore cube numbers.



Use images to explore examples and non-examples of square numbers.

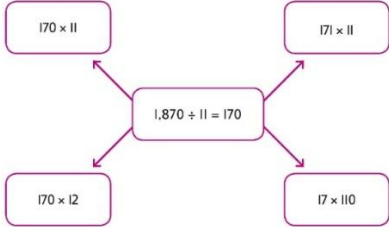
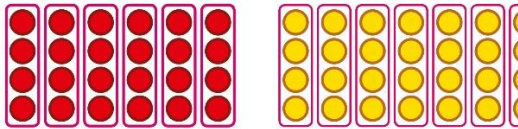
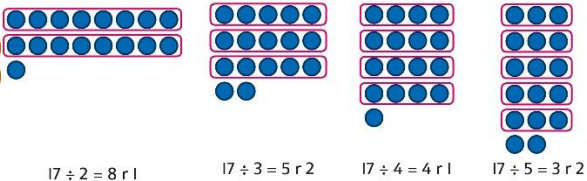


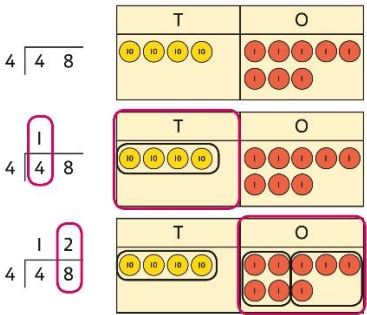
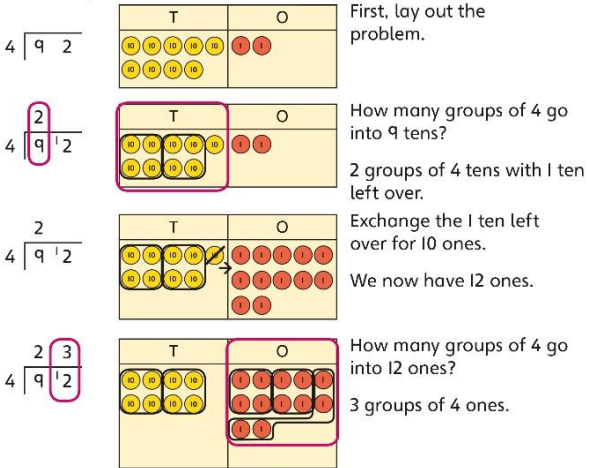
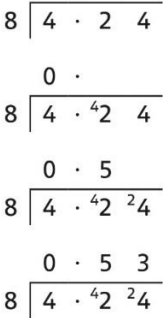

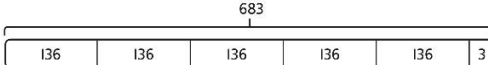
$8 \times 8 = 64$   
 $8^2 = 64$

Understand the pattern of square numbers in the multiplication tables.

Use a multiplication grid to circle each square number. Can children spot a pattern?

Use a known fact to generate families of related facts.

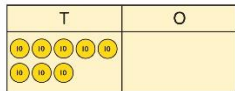
<p><b>Product</b></p>	<p><i>8 is a cube number.</i></p>		 <p>Use factors to calculate efficiently.</p> $  \begin{aligned}  &15 \times 16 \\  &= 3 \times 5 \times 2 \times 8 \\  &= 3 \times 8 \times 2 \times 5 \\  &= 24 \times 10 \\  &= 240  \end{aligned}  $																																																		
<p><b>Understanding factors</b></p> <p><b>Vocabulary:</b></p> <p><b>Times tables</b></p> <p><b>Representation</b></p> <p><b>Lots of Groups of Total</b></p> <p><b>Multiplication</b></p> <p><b>Division</b></p> <p><b>Product</b></p>	<p>Use equipment to explore different factors of a number.</p>  <p><i>4 is a factor of 24 but is not a factor of 30.</i></p>	<p>Recognise prime numbers as numbers having exactly two factors. Understand the link with division and remainders.</p> 	<p>Recognise and know primes up to 100. Understand that 2 is the only even prime, and that 1 is not a prime number.</p> <table border="1" data-bbox="1541 791 1980 1010"> <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> </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
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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																																												
<p><b>Division</b> All children will be taught: short and long division methods</p>																																																					
<p><b>Dividing up to four digits by a single digit using short division</b></p>	<p>Explore grouping using place value equipment.</p> <p><math>268 \div 2 = ?</math></p> <p><i>There is 1 group of 2 hundreds.</i></p>	<p>Use place value equipment on a place value grid alongside short division. The model uses grouping. A sharing model can also be used, although the model would need adapting.</p>	<p>Use short division for up to 4-digit numbers divided by a single digit.</p> $  \begin{array}{r}  0 \ 5 \ 5 \ 6 \\  7 \overline{) 3 \ 38 \ 39 \ 42}  \end{array}  $																																																		

<p><b>Dividing decimals</b></p> <p><b>Understanding inverse operations and the link with multiplication &amp; division</b></p> <p><u><b>Vocabulary:</b></u></p> <p>Groups Share Share equally Place value Repeated subtraction Divide Remainder Factors Divisible Partition Inverse Times tables</p>	<p><i>There are 3 groups of 2 tens. There are 4 groups of 2 ones.</i></p> <p><math>264 \div 2 = 134</math></p>	 <p>Lay out the problem as a short division.</p> <p><i>There is 1 group of 4 in 4 tens. There are 2 groups of 4 in 8 ones.</i></p> <p>Work with divisions that require exchange.</p>  <p>First, lay out the problem.</p> <p>How many groups of 4 go into 9 tens? 2 groups of 4 tens with 1 ten left over.</p> <p>Exchange the 1 ten left over for 10 ones. We now have 12 ones.</p> <p>How many groups of 4 go into 12 ones? 3 groups of 4 ones.</p>	<p><math>3,892 \div 7 = 556</math></p> <p><b>Use multiplication to check.</b></p> <p><math>556 \times 7 = ?</math></p> <p><math>6 \times 7 = 42</math> <math>50 \times 7 = 350</math> <math>500 \times 7 = 3500</math></p> <p><math>3,500 + 350 + 42 = 3,892</math></p> <p>Use short division to divide decimals with up to 2 decimal places.</p> 
<p><b>Understanding remainders</b></p> <p><u><b>Vocabulary:</b></u></p>	<p>Understand remainders using concrete versions of a problem.</p> <p><i>80 cakes divided into trays of 6.</i></p> 	<p>Use short division and understand remainders as the last remaining 1s.</p>	<p>In problem solving contexts, represent divisions including remainders with a bar model.</p> 

**Equal groups**  
**Left over**  
**Remainder**

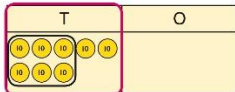
80 cakes in total. They make 13 groups of 6, with 2 remaining.

6 | 80



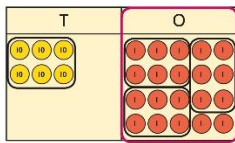
Lay out the problem as short division.

6 | 80



How many groups of 6 go into 8 tens?  
There is 1 group of 6 tens.  
There are 2 tens remaining.

6 | 13 r 2



How many groups of 6 go into 20 ones?  
There are 3 groups of 6 ones.  
There are 2 ones remaining.

$683 = 136 \times 5 + 3$   
 $683 \div 5 = 136 r 3$

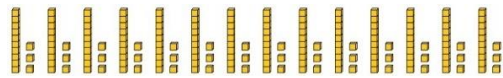
**Dividing by a 2-digit number using long division**

**Understanding inverse operations and the link with multiplication & division**

**Vocabulary:**

- Groups
- Share
- Share equally
- Place value
- Repeated subtraction
- Divide
- Remainder
- Factors
- Divisible

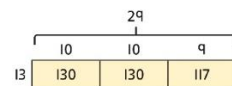
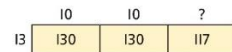
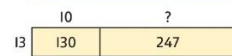
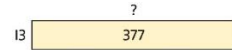
Use equipment to build numbers from groups.



182 divided into groups of 13.  
There are 14 groups.

Use an area model alongside written division to model the process.

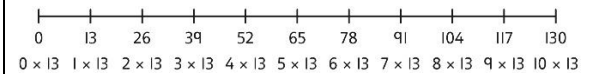
$377 \div 13 = ?$



$377 \div 13 = 29$

Use long division where factors are not useful (for example, when dividing by a 2-digit prime number).  
Write the required multiples to support the division process.

$377 \div 13 = ?$



$$\begin{array}{r}
 13 \overline{) 377} \\
 - 130 \quad 10 \\
 \hline
 247 \\
 - 130 \quad 10 \\
 \hline
 117 \\
 - 117 \quad 9 \\
 \hline
 0 \quad 29
 \end{array}$$

$377 \div 13 = 29$

A slightly different layout may be used, with the division completed above rather than at



**Partition  
Inverse  
Times tables**

the side.

$$\begin{array}{r} 3 \\ 21 \overline{) 798} \\ - 630 \\ \hline 168 \end{array}$$

$$\begin{array}{r} 38 \\ 21 \overline{) 798} \\ - 630 \\ \hline 168 \\ - 168 \\ \hline 0 \end{array}$$

Divisions with a remainder explored in problem-solving contexts.

**Other representations and methods may include:**

**Understanding the relationship between fractions and division**

Use sharing to explore the link between fractions and division.  
*1 whole shared between 3 people.  
Each person receives one-third.*



**Vocabulary:**

**Groups  
Share  
Share equally  
Part-part-whole  
Divide**



Use a bar model and other fraction representations to show the link between fractions and division.



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

Use the link between division and fractions to calculate divisions.

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

$$11 \div 4 = \frac{11}{4} = 2 \frac{3}{4}$$

**Dividing by a 2-digit number using factors**

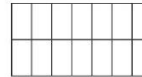
Understand that division by factors can be used when dividing by a number that is not prime.

Use factors and repeated division.  
 $1,260 \div 14 = ?$

Use factors and repeated division where appropriate.

**Vocabulary:**

- Groups
- Share
- Share equally
- Part-part-whole
- Divide
- Multiples
- Factors
- Product
- Times tables



$$1,260 \div 2 = 630$$

$$630 \div 7 = 90$$

$$1,260 \div 14 = 90$$

$$2,100 \div 12 = ?$$

$$2,100 \rightarrow \boxed{\div 2} \rightarrow \boxed{\div 6} \rightarrow$$

$$2,100 \rightarrow \boxed{\div 6} \rightarrow \boxed{\div 2} \rightarrow$$

$$2,100 \rightarrow \boxed{\div 3} \rightarrow \boxed{\div 4} \rightarrow$$

$$2,100 \rightarrow \boxed{\div 4} \rightarrow \boxed{\div 3} \rightarrow$$

$$2,100 \rightarrow \boxed{\div 3} \rightarrow \boxed{\div 2} \rightarrow \boxed{\div 2} \rightarrow$$