

Year 4

Calculation policy

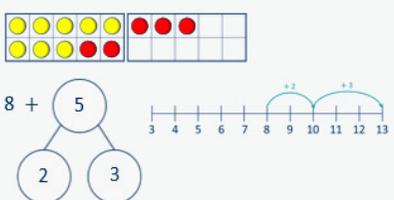
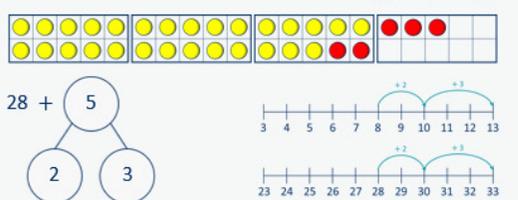
Updated September 2024

Guidance for teachers

The calculation policy is divided into four sections: addition, subtraction, multiplication and division. At the start of each section, you will find an overview of the progression of skills. Calculations involving decimal numbers and fractions are included.

The calculation policy follows the same concrete, pictorial, abstract approach as our main schemes of learning. Where appropriate, sentence stems and key questions are included alongside the key representations.

Where skills are divided into more than one section across the page, there is a progression in the level of difficulty from left to right. For example, when adding across a 10, children need to be able to add across 10 itself, before making links with related facts.

<p>Add across a 10</p> <p>Partition the number you are adding to make a full ten.</p>	<p>... can be partitioned into ... and ...</p>  <p>$8 + 5$</p>	<p>I add ... to get to ... then I add ...</p> <p>$8 + 5 = 13$ $28 + 5 = 33$</p>  <p>$28 + 5$</p>
--	--	---

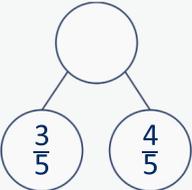
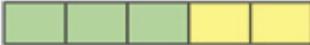
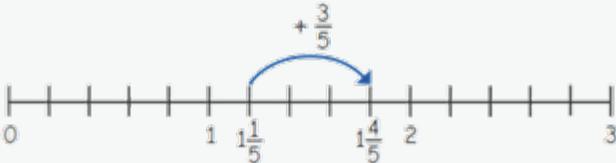
Progression of skills – Addition

Year 3	Year 4	Year 5
<ul style="list-style-type: none">▪ Add 1s, 10s and 100s to a 3-digit number▪ Add two numbers (no exchange)▪ Add two numbers across a 10 or 100▪ Complements to 100<ul style="list-style-type: none">▪ Add fractions with the same denominator within 1 whole▪ Calculate the duration of events	<ul style="list-style-type: none">▪ Add 1s, 10s and 100s to a 4-digit number▪ Add up to two 4-digit numbers▪ Add decimal numbers in the context of money▪ Add fractions and mixed numbers with the same denominator beyond 1 whole	<ul style="list-style-type: none">▪ Add using mental strategies▪ Add whole numbers with more than 4 digits▪ Add decimals with up to 2 decimal places▪ Complements to 1▪ Add fractions with denominators that are a multiple of one another

Addition

<p>Year 4</p>	<ul style="list-style-type: none"> • Add numbers with up to 4 digits using a formal written method. • Solve simple measure and money problems involving fractions and decimals to 2 decimal places. • Add fractions with the same denominator. 																																																	
<p>Progression of skills</p>	<p>Key representations</p>																																																	
<p>Add 1s, 10s and 100s to a 4-digit number</p> <p>Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.</p>	<p>The ones/tens/hundreds/thousands column will increase by ...</p> <table border="1" data-bbox="576 606 1038 793"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>1,000 1,000 1,000</td> <td>100 100 100 100</td> <td>10 10</td> <td>1 1 1 1 1</td> </tr> </tbody> </table> <table border="1" data-bbox="561 808 1156 918"> <tr> <td>$3,425 + 3 =$</td> <td>$3,425 + 300 =$</td> </tr> <tr> <td>$3,425 + 30 =$</td> <td>$3,425 + 3,000 =$</td> </tr> </table>	Thousands	Hundreds	Tens	Ones	1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1	$3,425 + 3 =$	$3,425 + 300 =$	$3,425 + 30 =$	$3,425 + 3,000 =$	<p>What patterns do you notice?</p> <p>$2,350 + 3 =$ $2,350 + 30 =$ $2,350 + 300 =$ $2,350 + 3,000 =$</p> <table border="1" data-bbox="1570 711 2005 911"> <tr> <td>$2,211 +$</td> <td><input type="text"/></td> <td>$= 2,251$</td> </tr> <tr> <td>$2,211 +$</td> <td><input type="text"/></td> <td>$= 2,215$</td> </tr> <tr> <td>$2,211 +$</td> <td><input type="text"/></td> <td>$= 2,511$</td> </tr> </table>	$2,211 +$	<input type="text"/>	$= 2,251$	$2,211 +$	<input type="text"/>	$= 2,215$	$2,211 +$	<input type="text"/>	$= 2,511$																											
Thousands	Hundreds	Tens	Ones																																															
1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1																																															
$3,425 + 3 =$	$3,425 + 300 =$																																																	
$3,425 + 30 =$	$3,425 + 3,000 =$																																																	
$2,211 +$	<input type="text"/>	$= 2,251$																																																
$2,211 +$	<input type="text"/>	$= 2,215$																																																
$2,211 +$	<input type="text"/>	$= 2,511$																																																
<p>Add up to two 4-digit numbers</p> <p>Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations.</p>	<p>There are ... ones/tens/hundreds so I do/do not need to make an exchange. I can exchange 10 ... for 1 ...</p> <table border="1" data-bbox="1224 961 1535 1325"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>1,000 1,000 1,000</td> <td>100 100 100 100 100 100</td> <td>10 10 10 10 10 10 10</td> <td>1 1 1</td> </tr> <tr> <td>1,000</td> <td>100 100 100 100 100</td> <td>10</td> <td>1 1 1 1 1 1 1 1</td> </tr> </tbody> </table> <table border="1" data-bbox="1618 1029 1873 1246"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Th</td> <td>H</td> <td>T</td> <td>O</td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>6</td> <td>7</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td>+</td> <td>1</td> <td>5</td> <td>1</td> <td>8</td> </tr> <tr> <td></td> <td></td> <td>6</td> <td>1</td> <td>9</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Th	H	T	O	1,000 1,000 1,000	100 100 100 100 100 100	10 10 10 10 10 10 10	1 1 1	1,000	100 100 100 100 100	10	1 1 1 1 1 1 1 1								Th	H	T	O			4	6	7	3			+	1	5	1	8			6	1	9	1						
Th	H	T	O																																															
1,000 1,000 1,000	100 100 100 100 100 100	10 10 10 10 10 10 10	1 1 1																																															
1,000	100 100 100 100 100	10	1 1 1 1 1 1 1 1																																															
		Th	H	T	O																																													
		4	6	7	3																																													
		+	1	5	1	8																																												
		6	1	9	1																																													

Addition

Progression of skills	Key representations	
<p>Add decimal numbers in the context of money</p> <p>Emphasis on partitioning and use of number lines rather than formal written calculations.</p>	<p>... pence + ... pence = ... pence ... pounds + ... pounds = ... pounds</p>  <p>$45\text{p} + 25\text{p} = 70\text{p}$ $\text{£}2 + \text{£}3 = \text{£}5$ $\text{£}5 + 70\text{p} = \text{£}5.70$</p>	<p>£3.25 can be partitioned into £3 + 20p + 5p</p> 
<p>Add fractions and mixed numbers with the same denominator beyond 1 whole</p>	<p>When adding fractions with the same denominator, I only add the numerator. ... fifths + ... fifths = ... fifths</p>  <p>$\frac{3}{5} + \frac{4}{5} = \frac{7}{5} = 1\frac{2}{5}$</p>    	

Progression of skills - Subtraction

Year 3	Year 4	Year 5
<ul style="list-style-type: none">▪ Subtract 1s, 10s and 100s from a 3-digit number▪ Subtract two numbers (no exchange)▪ Subtract two numbers across a 10 or 100▪ Complements to 100▪ Subtract fractions with the same denominator within 1 whole	<ul style="list-style-type: none">▪ Subtract 1s, 10s, 100s and 1,000s from a 4-digit number▪ Subtract up to two 4-digit numbers▪ Subtract decimal numbers in the context of money▪ Subtract fractions and mixed numbers with the same denominator	<ul style="list-style-type: none">▪ Subtract whole numbers with more than 4 digits▪ Subtract using mental strategies▪ Subtract decimals with up to 2 decimal places▪ Complements to 1▪ Subtract fractions with denominators that are a multiple of one another

Subtraction

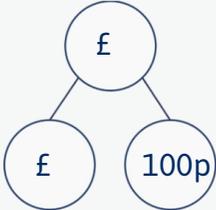
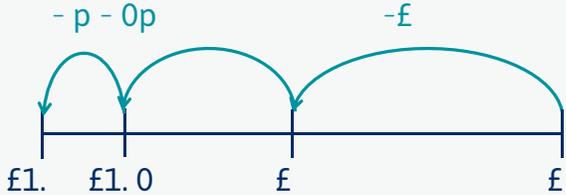
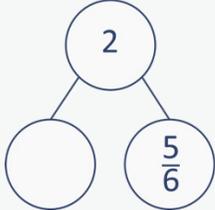
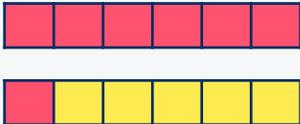
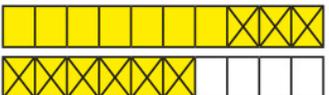
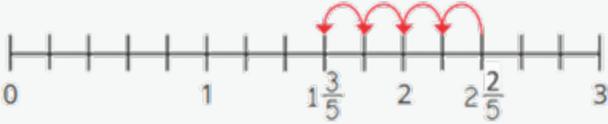
<p>Year 4</p>	<ul style="list-style-type: none"> Subtract numbers with up to 4 digits using a formal written method. Solve simple measure and money problems involving fractions and decimals to 2 decimal places. Subtract fractions with the same denominator.
----------------------	---

<p>Progression of skills</p>	<p>Key representations</p>
-------------------------------------	-----------------------------------

<p>Subtract 1s, 10s, 100s and 1,000s from a 4-digit number</p> <p>Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.</p>	<p>The ones/tens/hundreds/thousands</p> <table border="1" data-bbox="576 562 1038 748"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>1,000 1,000 1,000</td> <td>100 100 100 100</td> <td>10 10</td> <td>1 1 1 1 1</td> </tr> </tbody> </table> <table border="1" data-bbox="576 762 1129 873"> <tr> <td>3,425 - 2 =</td> <td>3,425 - 200 =</td> </tr> <tr> <td>3,425 - 20 =</td> <td>3,425 - 2,000 =</td> </tr> </table>	Thousands	Hundreds	Tens	Ones	1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1	3,425 - 2 =	3,425 - 200 =	3,425 - 20 =	3,425 - 2,000 =	<p>What patterns do you notice?</p> <p>4,356 - 3 =</p> <p>4,356 - 30 =</p> <p>4,356 - 300 =</p> <p>4,356 - 3,000 =</p> <table border="1" data-bbox="1570 676 2003 862"> <tr> <td>4,433 -</td> <td><input type="text"/></td> <td>= 4,430</td> </tr> <tr> <td>4,433 -</td> <td><input type="text"/></td> <td>= 4,033</td> </tr> <tr> <td>4,433 -</td> <td><input type="text"/></td> <td>= 4,403</td> </tr> </table> <p>6,940 - 200 =</p> <p>6,940 - 300 =</p> <p>6,940 - 400 =</p>	4,433 -	<input type="text"/>	= 4,430	4,433 -	<input type="text"/>	= 4,033	4,433 -	<input type="text"/>	= 4,403
Thousands	Hundreds	Tens	Ones																				
1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1																				
3,425 - 2 =	3,425 - 200 =																						
3,425 - 20 =	3,425 - 2,000 =																						
4,433 -	<input type="text"/>	= 4,430																					
4,433 -	<input type="text"/>	= 4,033																					
4,433 -	<input type="text"/>	= 4,403																					

<p>Subtract up to two 4-digit numbers</p> <p>Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations.</p>	<p>I need to subtract... ones/tens/hundreds. I do/do not need to make an exchange.</p> <p>I can exchange 1... for 10...</p> <table border="1" data-bbox="1073 993 1570 1316"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>1,000 1,000 1,000</td> <td>100</td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> <tr> <td></td> <td></td> <td>10 10 10</td> <td>1 1 1</td> </tr> </tbody> </table> <table border="1" data-bbox="1603 1033 1897 1282"> <thead> <tr> <th></th> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>3</td> <td>2</td> <td>0</td> <td>6</td> </tr> <tr> <td>-</td> <td>2</td> <td>1</td> <td>4</td> <td>8</td> </tr> <tr> <td></td> <td>1</td> <td>0</td> <td>5</td> <td>8</td> </tr> </tbody> </table>	Th	H	T	O	1,000 1,000 1,000	100	10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1			10 10 10	1 1 1		Th	H	T	O		3	2	0	6	-	2	1	4	8		1	0	5	8
Th	H	T	O																																																														
1,000 1,000 1,000	100	10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
		10 10 10	1 1 1																																																														
	Th	H	T	O																																																													
	3	2	0	6																																																													
-	2	1	4	8																																																													
	1	0	5	8																																																													

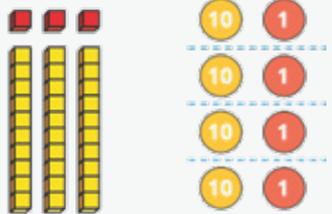
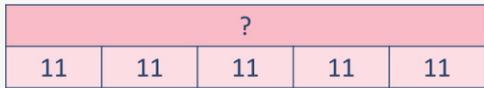
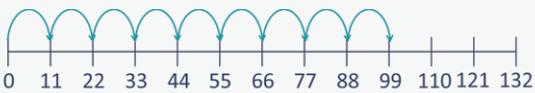
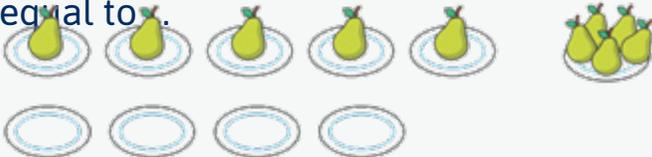
Subtraction

Progression of skills	Key representations	
<p>Subtract decimal numbers in the context of money</p> <p>Emphasis here is on partitioning and use of number lines rather than formal written calculations.</p>	<p>I can partition £... into £... and 100p</p> <p>£... - £... = £... 100p - ...p = ...p</p> <p>£5 - £3.26 £4 - £3 = £1 100p - 26p = 74p £5 - £3.26 = £1.74</p> 	<p>£3.26 can be partitioned into £3 + 20p + 6p</p> 
<p>Subtract fractions and mixed numbers with the same denominator</p> <p>Include subtracting fractions from wholes.</p>	<p>When subtracting fractions with the same denominator, I only subtract the numerator.</p> <p>... tenths - ... tenths = ... tenths</p>    $\frac{16}{10} - \frac{5}{10}$  $\frac{16}{10} - \frac{9}{10}$  	

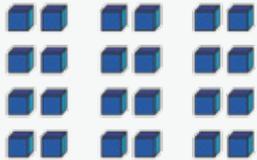
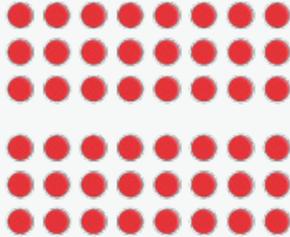
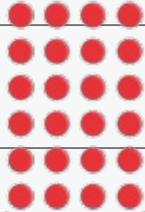
Progression of skills – Multiplication

Year 3	Year 4	Year 5
<ul style="list-style-type: none"> ▪ The 3 times-table ▪ The 4 times-table ▪ The 8 times-table ▪ Related facts ▪ Multiply a 2-digit number by a 1-digit number - no exchange ▪ Multiply a 2-digit number by a 1-digit number - with exchange ▪ Scaling ▪ Correspondence problems 	<ul style="list-style-type: none"> ▪ Times-table facts to 12×12 ▪ Multiply by 1 and 0 ▪ Multiply 3 numbers ▪ Factor pairs ▪ Multiply by 10 and 100 ▪ Related facts ▪ Mental strategies ▪ Multiply a 2 or 3-digit number by a 1-digit number ▪ Scaling ▪ Correspondence problems 	<ul style="list-style-type: none"> ▪ Multiples and factors ▪ Square and cube numbers ▪ Multiply numbers up to 4 digits by a 1-digit number ▪ Multiply numbers up to 4 digits by a 2-digit number ▪ Multiply by 10, 100 and 1,000 ▪ Mental strategies ▪ Multiply fractions by a whole number ▪ Multiply mixed numbers by a whole number ▪ Find the whole

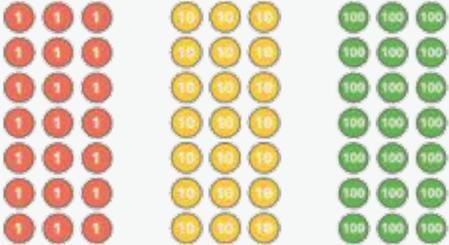
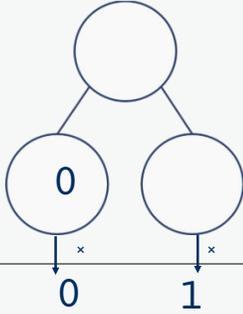
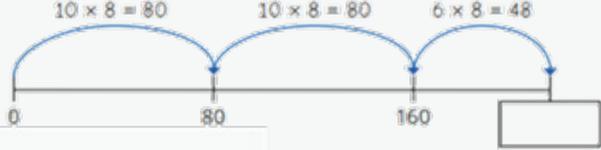
Multiplication

<p>Year 4</p>	<ul style="list-style-type: none"> Recall multiplication facts for multiplication tables up to 12×12 Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations. Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. 																																																																																																					
<p>Progression of skills</p>	<p>Key representations</p>																																																																																																					
<p>Times-table facts to 12×12</p> <p>Encourage daily counting in multiples both forwards and back. Encourage children to notice links between related times-tables.</p>	<p>... groups of ... = ... times ... is equal to ...</p> <p>... \times ... =</p>   	<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr> <tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr> <tr><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td></tr> <tr><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td></tr> <tr><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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>Multiply by 1 and 0</p>	<p>Any number multiplied by 1 is equal to ... Any number multiplied by 0 is equal to ...</p> 	<p>... \times ... = ...</p> <table border="1"> <tr><td>$1 \times 1 = 1$</td><td>$1 \times 0 = 0$</td></tr> <tr><td>$2 \times 1 = 2$</td><td>$2 \times 0 = 0$</td></tr> <tr><td>$3 \times 1 = 3$</td><td>$3 \times 0 = 0$</td></tr> <tr><td>$4 \times 1 = 4$</td><td>$4 \times 0 = 0$</td></tr> </table>	$1 \times 1 = 1$	$1 \times 0 = 0$	$2 \times 1 = 2$	$2 \times 0 = 0$	$3 \times 1 = 3$	$3 \times 0 = 0$	$4 \times 1 = 4$	$4 \times 0 = 0$																																																																																												
$1 \times 1 = 1$	$1 \times 0 = 0$																																																																																																					
$2 \times 1 = 2$	$2 \times 0 = 0$																																																																																																					
$3 \times 1 = 3$	$3 \times 0 = 0$																																																																																																					
$4 \times 1 = 4$	$4 \times 0 = 0$																																																																																																					

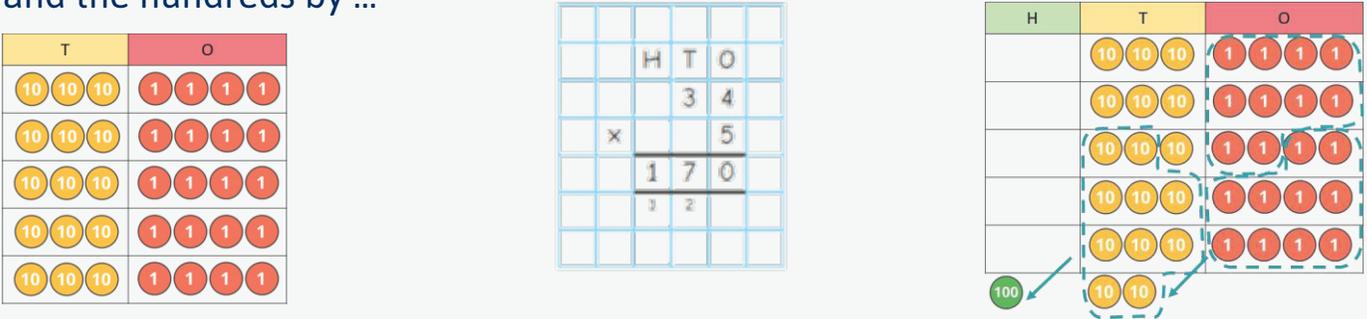
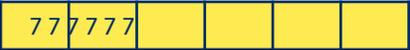
Multiplication

Progression of skills	Key representations																						
<p>Multiply 3 numbers</p> <p>Children use their understanding of commutativity to multiply more efficiently.</p>	<p>To work out ... \times ... \times ..., I can first calculate ... \times ... and then multiply the answer by ...</p> <div style="display: flex; align-items: center;">  <div style="border: 1px solid black; padding: 5px; margin-left: 10px;"> $4 \times 2 \times 3 = 8 \times 3 = 24$ $2 \times 3 \times 4 = 6 \times 4 = 24$ $3 \times 4 \times 2 = 12 \times 2 = 24$ </div> </div>																						
<p>Factor pairs</p> <p>Children explore equivalent calculations using different factors pairs.</p>	<p>$12 = \dots \times \dots$, so ... $\times 12 = \dots \times \dots \times \dots$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <div style="border: 1px solid black; padding: 5px; margin: 5px;"> $8 \times 6 = 8 \times 3 \times 2$ $8 \times 6 = 24 \times 2$ </div> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <div style="border: 1px solid black; padding: 5px; margin: 5px;"> $6 \times 8 = 6 \times 4 \times 2$ $6 \times 8 = 24 \times 2$ </div> </div> </div>																						
<p>Multiply by 10 and 100</p> <p>Some children may over-generalise that multiplying by 10 or 100 always results in adding zeros. This will cause issues later when multiplying decimals.</p>	<p>When I multiply by 10, the digits move ... place value column to the left. ... is 10 times the size of ...</p> <div style="display: flex; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center; width: 100px;"> <tr><th style="background-color: #d9ead3;">H</th><th style="background-color: #fff2cc;">T</th><th style="background-color: #f4cccc;">O</th></tr> <tr><td> </td><td>●●</td><td>●●●</td></tr> <tr><td> </td><td>●●</td><td>●●</td></tr> </table> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;"> $35 \times 10 = 350$ </div> </div>	H	T	O		●●	●●●		●●	●●	<p>... When I multiply by 100, the digits move ... place value columns to the left. ... is 100 times the size of ...</p> <div style="display: flex; align-items: center;"> <table border="1" style="border-collapse: collapse; text-align: center; width: 100px;"> <tr><th style="background-color: #d9ead3;">Th</th><th style="background-color: #d9ead3;">H</th><th style="background-color: #fff2cc;">T</th><th style="background-color: #f4cccc;">O</th></tr> <tr><td> </td><td> </td><td>●</td><td>●●●</td></tr> <tr><td> </td><td> </td><td> </td><td>●●●</td></tr> </table> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;"> $14 \times 100 = 1,400$ </div> </div>	Th	H	T	O			●	●●●				●●●
H	T	O																					
	●●	●●●																					
	●●	●●																					
Th	H	T	O																				
		●	●●●																				
			●●●																				

Multiplication

Progression of skills	Key representations								
<p>Related facts</p> <p>Use knowledge of multiplying by 10 and 100 to scale times-table facts.</p>	<p>... × ... ones is equal to ... ones so ... × ... tens is equal to ... tens and ... × ... hundreds is equal to ... hundreds.</p>  <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px;"> $3 \times 7 = 21$ $3 \times 70 = 210$ $3 \times 700 = 2,100$ </div> <div style="border: 1px solid black; padding: 5px;"> $7 \times 3 = 21$ $7 \times 30 = 210$ $7 \times 300 = 2,100$ </div> </div>								
<p>Mental strategies</p> <p>Partition 2 or 3-digit numbers to multiply using informal methods.</p>	<p>... tens multiplied by ... is equal to ... tens. ...ones multiplied by ... is equal to ... ones.</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="background-color: #fff9c4;">Tens</th> <th style="background-color: #ffcdd2;">Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> $3 \times 26 = 60 + 18 = 78$ </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> $26 \times 8 = 80 + 80 + 48 = 208$ </div>	Tens	Ones						
Tens	Ones								

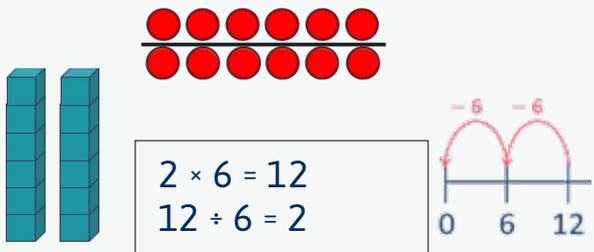
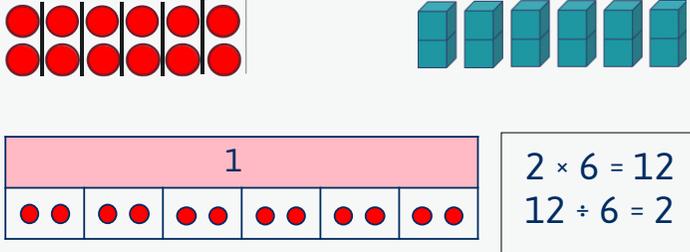
Multiplication

Progression of skills	Key representations																								
<p>Multiply a 2 or 3-digit number by a 1-digit number</p> <p>The short multiplication method is introduced for the first time.</p>	<p>To multiply a 2-digit number by ... , I multiply the ones by ... and the tens by ... To multiply a 3-digit number by ... , I multiply the ones by ... , the tens by ... and the hundreds by ...</p> 																								
<p>Scaling</p> <p>Children focus on multiplication as scaling (... times the size).</p>	<p>... is ... times the size of ...</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="576 782 986 893"> <p>7</p>  </div> <div data-bbox="1301 782 1781 893"> <p>6</p>  </div> </div> <p>A computer mouse costs £7 A keyboard costs 6 times as much.</p> <p>A red ribbon is 6 cm. A yellow ribbon is 7 times as long.</p>																								
<p>Correspondence problems</p> <p>Encourage children to use tables to show all the different possible combinations.</p>	<p>For every ... , there are ... possibilities. There are ... × ... possibilities altogether.</p> <p>A pizza company offers a choice of 5 toppings and 3 bases.</p> <div style="display: flex; align-items: flex-start;"> <div data-bbox="576 1265 861 1333" style="border: 1px solid black; padding: 5px; margin-right: 20px;"> $5 \times 3 = 15$ </div> <table border="1" data-bbox="1197 1062 1939 1310"> <thead> <tr> <th></th> <th>Deep pan</th> <th>Italian</th> <th>Thin</th> </tr> </thead> <tbody> <tr> <th>Cheese</th> <td>C DP</td> <td>C I</td> <td>C Th</td> </tr> <tr> <th>Mushroom</th> <td>M DP</td> <td>M I</td> <td>M Th</td> </tr> <tr> <th>Vegetable</th> <td>V DP</td> <td>V I</td> <td>V Th</td> </tr> <tr> <th>Chicken</th> <td>C DP</td> <td>C I</td> <td>C Th</td> </tr> <tr> <th>Tuna</th> <td>T DP</td> <td>T I</td> <td>T Th</td> </tr> </tbody> </table> </div>		Deep pan	Italian	Thin	Cheese	C DP	C I	C Th	Mushroom	M DP	M I	M Th	Vegetable	V DP	V I	V Th	Chicken	C DP	C I	C Th	Tuna	T DP	T I	T Th
	Deep pan	Italian	Thin																						
Cheese	C DP	C I	C Th																						
Mushroom	M DP	M I	M Th																						
Vegetable	V DP	V I	V Th																						
Chicken	C DP	C I	C Th																						
Tuna	T DP	T I	T Th																						

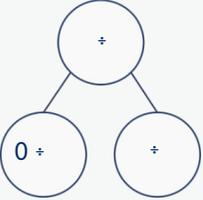
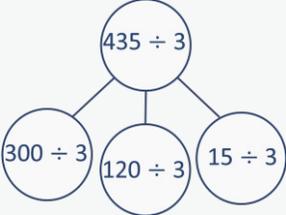
Progression of skills – Division

Year 3	Year 4	Year 5
<ul style="list-style-type: none">▪ Divide by 3▪ Divide by 4▪ Divide by 8▪ Related facts<ul style="list-style-type: none">▪ Divide a 2-digit number by a 1-digit number - no exchange▪ Divide a 2-digit number by a 1-digit number - with remainders▪ Unit fractions of a set of objects▪ Non-unit fractions of a set of objects	<ul style="list-style-type: none">▪ Division facts to 12×12▪ Divide a number by 1 and itself▪ Related facts▪ Divide a 2 or 3-digit number by a 1-digit number▪ Divide by 10 and 100	<ul style="list-style-type: none">▪ Mental strategies▪ Divide numbers up to 4 digits by a 1-digit number▪ Divide by 10, 100 and 1,000▪ Fraction of an amount

Division

<p>Year 4</p>	<ul style="list-style-type: none"> Recall division facts for multiplication tables up to 12×12 Use place value, known and derived facts to divide mentally, including: dividing by 1 Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. 	
<p>Progression of skills</p>	<p>Key representations</p>	
<p>Division facts to 12×12</p> <p>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.</p>	<p>There are ... groups of ... in ...</p> <p>$\dots \div \dots =$</p>  <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $2 \times 6 = 12$ $12 \div 6 = 2$ </div>	<p>... has been shared equally into ... equal groups.</p> <p>$\dots \div \dots =$</p>  <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $2 \times 6 = 12$ $12 \div 6 = 2$ </div>
<p>Divide a number by 1 and itself</p> <p>Children may try to divide a number by zero and it should be highlighted that this is not possible.</p>	<p>When I divide a number by 1, the number remains the same.</p> <p>5 shared between 1 is 5 </p> <p>There are 5 groups of 1 in 5</p> 	<p>When I divide a number by itself, the answer is 1</p> <p>5 shared between 5 is 1</p>  <p>There is 1 group of 5 in 5</p> 

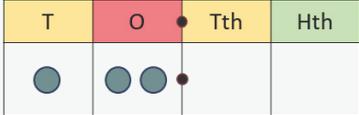
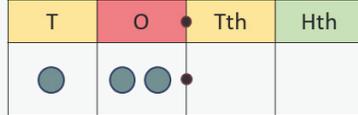
Division

Progression of skills	Key representations																										
<p>Related facts</p> <p>Link to known times-table facts.</p>	<p>... ÷ ... is equal to ... so ... tens ÷ ... is equal to ... tens and ... hundreds ÷ ... is equal to ... hundreds.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> $21 \div 7 = 3$ $210 \div 7 = 30$ $2,100 \div 7 = 300$ </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> $21 \div 3 = 7$ $210 \div 3 = 70$ $2,100 \div 3 = 700$ </div> </div>																										
<p>Divide a 2 or 3-digit number by a 1-digit number</p> <p>Progress from divisions with no exchange, to divisions with exchange and then divisions with remainders.</p>	<p>I can partition ... into ... tens and ... ones.</p> <div style="display: flex; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 10px; margin-left: 20px;"> $80 \div 4 = 20$ $4 \div 4 = 1$ $84 \div 4 = 21$ </div> </div> <div style="margin-top: 20px;"> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="background-color: #fff9c4;">Tens</th> <th style="background-color: #f8bbd0;">Ones</th> </tr> </thead> <tbody> <tr><td>10 10</td><td>1</td></tr> <tr><td>10 10</td><td>1</td></tr> <tr><td>10 10</td><td>1</td></tr> <tr><td>10 10</td><td>1</td></tr> </tbody> </table> </div>	Tens	Ones	10 10	1	10 10	1	10 10	1	10 10	1	<p>I cannot share the hundreds/tens equally, so I need to exchange 1 ... for 10 ...</p> <div style="display: flex; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 10px; margin-left: 20px;"> $300 \div 3 = 100$ $120 \div 3 = 40$ $15 \div 3 = 5$ $435 \div 3 = 145$ </div> </div> <div style="margin-top: 20px;"> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="background-color: #c8e6c9;">Hundreds</th> <th style="background-color: #fff9c4;">Tens</th> <th style="background-color: #f8bbd0;">Ones</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>10 10 10 10</td> <td>1 1 1 1 1</td> </tr> <tr> <td>100</td> <td>10 10 10 10</td> <td>1 1 1 1 1</td> </tr> <tr> <td>100</td> <td>10 10 10 10</td> <td>1 1 1 1 1</td> </tr> <tr> <td>100</td> <td>10</td> <td></td> </tr> </tbody> </table> <p style="font-size: small; color: red; margin-top: 5px;">(Red arrows indicate the exchange of one hundred block for ten ten blocks.)</p> </div>	Hundreds	Tens	Ones	100	10 10 10 10	1 1 1 1 1	100	10 10 10 10	1 1 1 1 1	100	10 10 10 10	1 1 1 1 1	100	10	
Tens	Ones																										
10 10	1																										
10 10	1																										
10 10	1																										
10 10	1																										
Hundreds	Tens	Ones																									
100	10 10 10 10	1 1 1 1 1																									
100	10 10 10 10	1 1 1 1 1																									
100	10 10 10 10	1 1 1 1 1																									
100	10																										

Division

Progression of skills	Key representations
<p>Divide numbers up to 4 digits by a 1-digit number</p> <p>The short division method is introduced for the first time. Moved from Y5.</p>	<p>There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ...</p> <p>The first diagram shows a grid with a division problem $3 \overline{) 39}$. Below it, base ten blocks represent 39: three tens rods and nine ones units. The second diagram shows a grid with $3 \overline{) 3617}$. Below it, base ten blocks represent 3617: three hundreds flats, six tens rods, one ten rod (with an arrow pointing to a group of 10 ones units), and seven ones units. The third diagram shows a grid with $4 \overline{) 4894}$. Below it, base ten blocks represent 4894: four thousands flats, eight hundreds flats, nine tens rods, and four ones units. An arrow points to a group of 10 tens rods being exchanged for one hundred flat.</p>

Division

Progression of skills	Key representations			
<p>Divide by 10 and 100</p> <p>Encourage children to notice that dividing by 100 is the same as dividing by 10 twice.</p>	<p>When I divide by 10, the digits move 1 place value column to the right. ... is one-tenth the size of ...</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>$2 \div 10 = 0.2$</p> </div> <div style="text-align: center;">  <p>$12 \div 10 = 1.2$</p> </div> </div>		<p>When I divide by 100, the digits move 2 place value columns to the right. ... is one-hundredth the size of ...</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>$2 \div 100 = 0.02$</p> </div> <div style="text-align: center;">  <p>$12 \div 100 = 0.12$</p> </div> </div>	