

Year 5

# Calculation policy

Updated September 2024

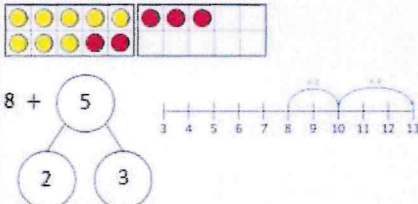
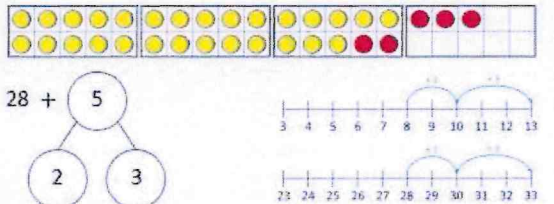
# Guidance for teachers

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.

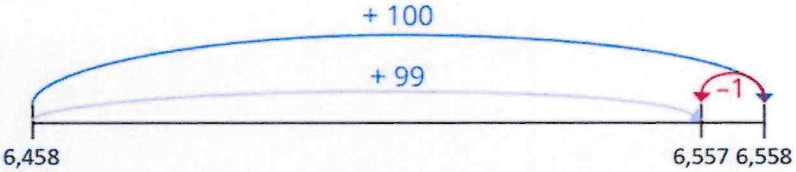
<p><b>Add across a 10</b></p> <p>Partition the number you are adding to make a full ten.</p>	<p>... can be partitioned into ... and ...</p>  <p><math>8 + 5</math></p>	<p>I add ... to get to ... then I add ...</p> <p><math>8 + 5 = 13</math> <math>28 + 5 = 33</math></p> 
--	--	--



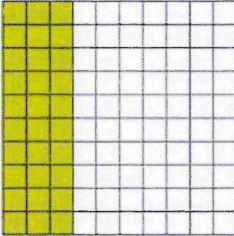
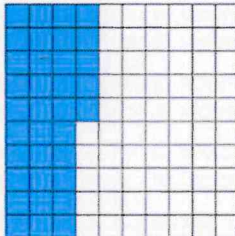
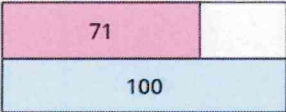
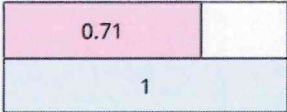
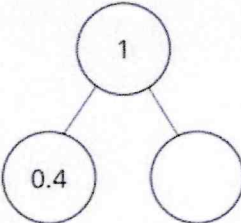
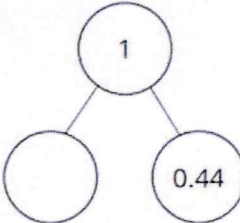
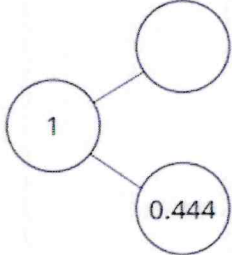
# Progression of skills – Addition

Year 4	Year 5	Year 6
<ul style="list-style-type: none"><li>• Add 1s, 10s and 100s to a 4-digit number</li><li>• Add up to two 4-digit numbers</li><li>• Add decimal numbers in the context of money</li><li>• Add fractions and mixed numbers with the same denominator beyond 1 whole</li></ul>	<ul style="list-style-type: none"><li>• Add using mental strategies</li><li>• Add whole numbers with more than 4 digits</li><li>• Add decimals with up to 2 decimal places</li><li>• Complements to 1</li><li>• Add fractions with denominators that are a multiple of one another</li></ul>	<ul style="list-style-type: none"><li>• Add integers up to 10 million</li><li>• Add decimals with up to 3 decimal places</li><li>• Order of operations</li><li>• Negative numbers</li><li>• Add fractions</li></ul>

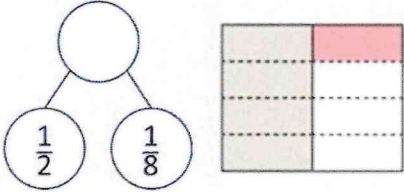
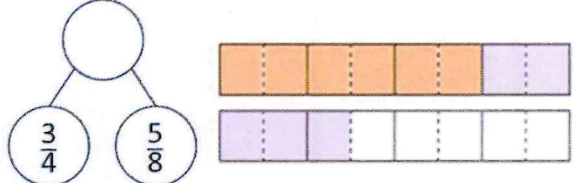

# Addition

<p><b>Year 5</b></p>	<ul style="list-style-type: none"> <li>• Add whole numbers with more than 4 digits, including using formal written methods.</li> <li>• Add numbers mentally with increasingly large numbers.</li> <li>• Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1</li> <li>• Add fractions with the same denominator, and denominators that are multiples of the same number.</li> </ul>																																																														
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>																																																														
<p><b>Add using mental strategies</b></p> <p>Add 1s, 10s, 100s, etc. to any number. Use number bonds and related facts.</p>	<table border="1" data-bbox="609 657 1218 833"> <thead> <tr> <th>TTh</th> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>●●●●</td> <td>●●●● ●●●● ●●</td> <td>●●●●</td> <td>●●●●</td> <td></td> </tr> </tbody> </table> <p>48,650 + 300 = 48,650 + 30,000 = 48,650 + 30 =</p>	TTh	Th	H	T	O	●●●●	●●●● ●●●● ●●	●●●●	●●●●		<p>To add ..., I can add ... then subtract ...</p> <table border="1" data-bbox="1290 715 1630 791"> <tr> <td>?</td> <td></td> </tr> <tr> <td>6,458</td> <td>99</td> </tr> </table> 	?		6,458	99																																															
TTh	Th	H	T	O																																																											
●●●●	●●●● ●●●● ●●	●●●●	●●●●																																																												
?																																																															
6,458	99																																																														
<p><b>Add whole numbers with more than 4 digits</b></p> <p>Encourage children to estimate and use inverse operations to check answers to calculations.</p>	<p>I can exchange 10 ... for 1 ...</p> <table border="1" data-bbox="1070 1056 1460 1449"> <thead> <tr> <th>TTh</th> <th>Th</th> <th>H</th> <th>T</th> <th>O</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> </tbody> </table> <table border="1" data-bbox="1469 1129 1724 1295"> <tr><td>2</td><td>6</td><td>5</td><td>7</td><td>4</td></tr> <tr><td>+</td><td>1</td><td>6</td><td>2</td><td>3</td><td>1</td></tr> <tr><td colspan="5"><hr/></td></tr> <tr><td>4</td><td>2</td><td>8</td><td>0</td><td>5</td></tr> <tr><td>1</td><td>1</td><td></td><td></td><td></td></tr> </table> <table border="1" data-bbox="1747 1257 2083 1465"> <tr><td></td><td>4</td><td></td><td>1</td><td></td></tr> <tr><td>+</td><td>2</td><td></td><td>8</td><td>4</td></tr> <tr><td colspan="5"><hr/></td></tr> <tr><td>8</td><td>9</td><td>9</td><td>2</td><td>6</td></tr> </table>		TTh	Th	H	T	O	●●	●●●● ●●●● ●●●● ●●●●	●●●●	●●●● ●●●●	●●	●	●●●● ●●●● ●●●●	●●●●	●●●●	●	2	6	5	7	4	+	1	6	2	3	1	<hr/>					4	2	8	0	5	1	1					4		1		+	2		8	4	<hr/>					8	9	9	2	6
TTh	Th	H	T	O																																																											
●●	●●●● ●●●● ●●●● ●●●●	●●●●	●●●● ●●●●	●●																																																											
●	●●●● ●●●● ●●●●	●●●●	●●●●	●																																																											
2	6	5	7	4																																																											
+	1	6	2	3	1																																																										
<hr/>																																																															
4	2	8	0	5																																																											
1	1																																																														
	4		1																																																												
+	2		8	4																																																											
<hr/>																																																															
8	9	9	2	6																																																											



Progression of skills	Key representations																																																																																					
<p><b>Add decimals with up to 2 decimal places</b></p> <p>Progress from the same number of decimal places to a different number of decimal places, and from no exchange to exchange.</p>	<p>I do/do not need to make an exchange because ... I can exchange 10 ... for 1 ...</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <thead> <tr> <th style="background-color: #f8d7da;">Ones</th> <th style="background-color: #fff3cd;">Tenths</th> <th style="background-color: #d4edda;">Hundredths</th> </tr> </thead> <tbody> <tr> <td>1 1 1</td> <td>0.1 0.1 0.1</td> <td>0.01 0.01 0.01</td> </tr> <tr> <td>1</td> <td>0.1</td> <td>0.01 0.01</td> </tr> <tr> <td>1 1 1</td> <td>0.1 0.1</td> <td>0.01</td> </tr> </tbody> </table>   <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black;">4</td><td>•</td><td>4</td><td>5</td></tr> <tr><td colspan="4">+</td></tr> <tr><td style="border-right: 1px solid black;">3</td><td>•</td><td>2</td><td>1</td></tr> <tr><td colspan="4">-----</td></tr> <tr><td style="border-right: 1px solid black;"></td><td>•</td><td></td><td></td></tr> </table> </div> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <thead> <tr> <th style="background-color: #f8d7da;">0</th> <th style="background-color: #fff3cd;">Tth</th> <th style="background-color: #d4edda;">Hth</th> <th style="background-color: #d1ecf1;">Thth</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.1 0.1</td> <td>0.01 0.01</td> <td>0.001</td> </tr> <tr> <td></td> <td></td> <td>0.01 0.01</td> <td></td> </tr> <tr> <td></td> <td></td> <td>0.01 0.01</td> <td></td> </tr> <tr> <td></td> <td></td> <td>0.01 0.01</td> <td></td> </tr> <tr> <td>1 1</td> <td>0.1 0.1</td> <td>0.01 0.01</td> <td></td> </tr> <tr> <td></td> <td>0.1</td> <td>0.01 0.01</td> <td></td> </tr> </tbody> </table>   <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black;">1</td><td>•</td><td>2</td><td>8</td><td>1</td></tr> <tr><td colspan="5">+</td></tr> <tr><td style="border-right: 1px solid black;">2</td><td>•</td><td>5</td><td>4</td><td></td></tr> <tr><td colspan="5">-----</td></tr> <tr><td style="border-right: 1px solid black;"></td><td>•</td><td></td><td></td><td></td></tr> </table> </div> </div>	Ones	Tenths	Hundredths	1 1 1	0.1 0.1 0.1	0.01 0.01 0.01	1	0.1	0.01 0.01	1 1 1	0.1 0.1	0.01	4	•	4	5	+				3	•	2	1	-----					•			0	Tth	Hth	Thth	1	0.1 0.1	0.01 0.01	0.001			0.01 0.01				0.01 0.01				0.01 0.01		1 1	0.1 0.1	0.01 0.01			0.1	0.01 0.01		1	•	2	8	1	+					2	•	5	4		-----						•			
Ones	Tenths	Hundredths																																																																																				
1 1 1	0.1 0.1 0.1	0.01 0.01 0.01																																																																																				
1	0.1	0.01 0.01																																																																																				
1 1 1	0.1 0.1	0.01																																																																																				
4	•	4	5																																																																																			
+																																																																																						
3	•	2	1																																																																																			
-----																																																																																						
	•																																																																																					
0	Tth	Hth	Thth																																																																																			
1	0.1 0.1	0.01 0.01	0.001																																																																																			
		0.01 0.01																																																																																				
		0.01 0.01																																																																																				
		0.01 0.01																																																																																				
1 1	0.1 0.1	0.01 0.01																																																																																				
	0.1	0.01 0.01																																																																																				
1	•	2	8	1																																																																																		
+																																																																																						
2	•	5	4																																																																																			
-----																																																																																						
	•																																																																																					
<p><b>Complements to 1</b></p> <p>Pairs of numbers with up to 3 decimal places which total 1</p> <p>Encourage children to make links with bonds to 10 and complements to 100 and 1,000</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <math>0.3 + \square = 1</math>   </div> <div style="text-align: center;"> <math>0.35 + \square = 1</math>   </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <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="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="text-align: center;"> <math>4 + 6 = 10</math>  <math>44 + 56 = 100</math>  <math>444 + 556 = 1,000</math> </div> <div style="text-align: center;"> <math>0.4 + 0.6 = 1</math>  <math>0.44 + 0.56 = 1</math>  <math>0.444 + 0.556 = 1</math> </div> </div>																																																																																					

# Addition

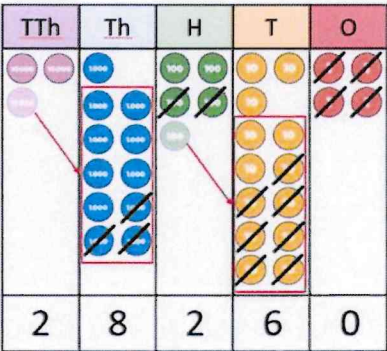
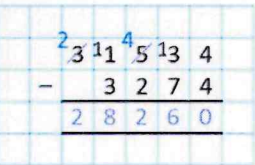
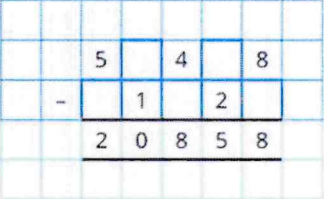
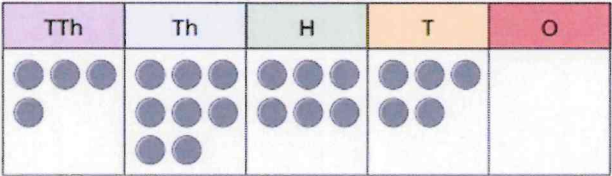
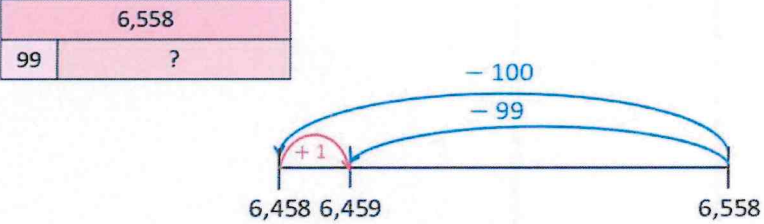
Progression of skills	Key representations
<p><b>Add fractions with denominators that are a multiple of one another</b></p> <p>Encourage children to convert fractions to the same denominator before adding.</p> <p>Progress from adding fractions within 1 whole to adding fractions beyond 1 whole.</p>	<p>The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <math display="block">\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}</math> </div> <div style="text-align: center;">  <math display="block">\frac{3}{4} + \frac{5}{8} = \frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}</math> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  <math display="block">\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}</math> </div> </div>

# Progression of skills - Subtraction

Year 4	Year 5	Year 6
<ul style="list-style-type: none"><li>• Subtract 1s, 10s, 100s and 1,000s from a 4-digit number</li><li>• Subtract up to two 4-digit numbers</li><li>• Subtract decimal numbers in the context of money</li><li>• Subtract fractions and mixed numbers with the same denominator</li></ul>	<ul style="list-style-type: none"><li>• Subtract whole numbers with more than 4 digits</li><li>• Subtract using mental strategies</li><li>• Subtract decimals with up to 2 decimal places</li><li>• Complements to 1</li><li>• Subtract fractions with denominators that are a multiple of one another</li></ul>	<ul style="list-style-type: none"><li>• Subtract integers up to 10 million</li><li>• Subtract decimals with up to 3 decimal places</li><li>• Order of operations</li><li>• Negative numbers</li><li>• Subtract fractions</li></ul>

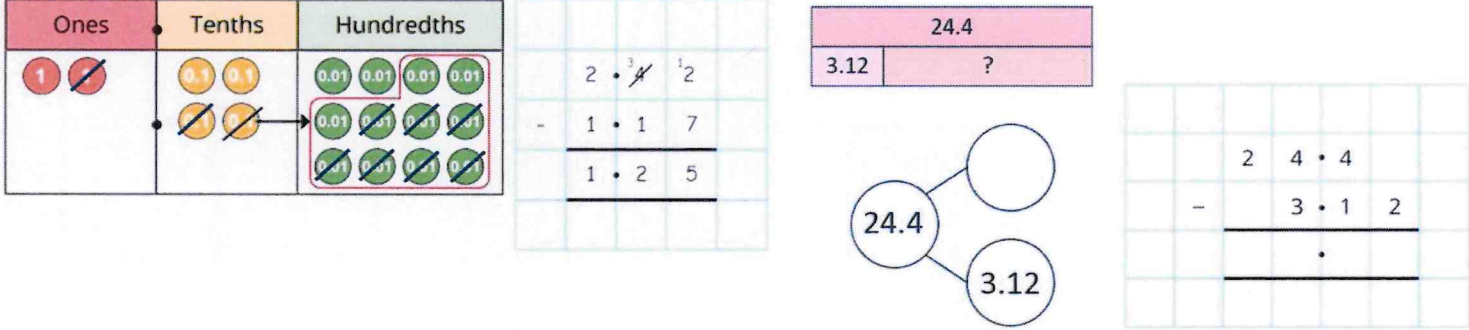
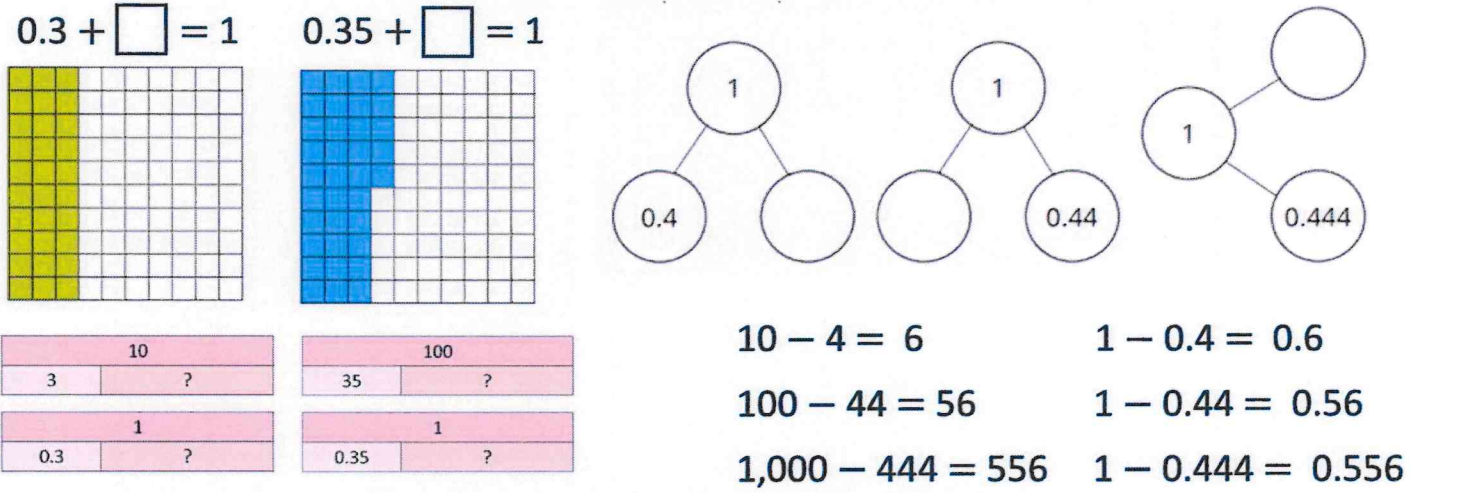


# Subtraction

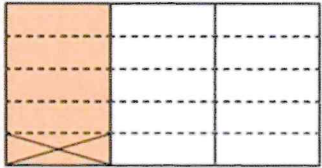
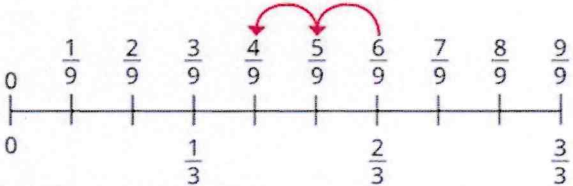
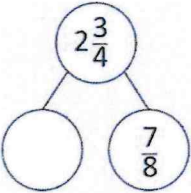
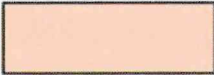
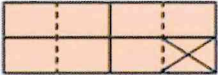
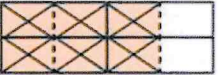
<p><b>Year 5</b></p>	<ul style="list-style-type: none"> <li>Subtract whole numbers with more than 4 digits.</li> <li>Subtract numbers mentally with increasingly large numbers.</li> <li>Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1</li> <li>Subtract fractions with the same denominator, and denominators that are multiples of the same number.</li> </ul>	
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>	
<p><b>Subtract whole numbers with more than 4 digits</b></p> <p>Encourage children to estimate and use inverse operations to check answers to calculations.</p>	<p>I can exchange 1 ... for 10 ...</p>   	
<p><b>Subtract using mental strategies</b></p> <p>Subtract 1s, 10s, 100s etc from any number. Use number bonds and related facts.</p>	 <p> <math>48,650 - 300 =</math>  <math>48,650 - 30,000 =</math>  <math>48,650 - 30 =</math> </p>	<p>To subtract ..., I can subtract ... then add ...</p> 



# Subtraction

Progression of skills	Key representations
<p><b>Subtract decimals with up to 2 decimal places</b></p> <p>Progress from the same number of decimal places to a different number of decimal places and from no exchange to exchange.</p>	
<p><b>Complements to 1</b></p> <p>Encourage children to make links with bonds to 10 and complements to 100 and 1,000 when finding a missing part or subtracting from 1</p>	

# Subtraction

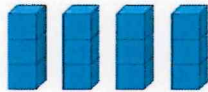


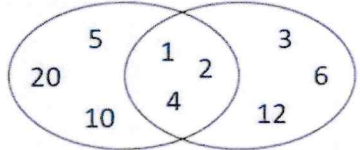



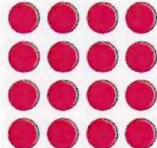


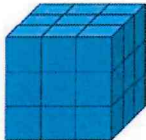
Progression of skills	Key representations
<p><b>Subtract fractions with denominators that are a multiple of one another</b></p> <p>Convert fractions to the same denominator before subtracting. Progress from subtracting fractions within 1 whole to subtracting from a mixed number.</p>	<p>The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.</p>   $\frac{2}{3} - \frac{2}{9} = \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$     <p><math>\frac{1}{3} - \frac{1}{15} = \frac{5}{15} - \frac{1}{15} = \frac{4}{15}</math></p>



# Progression of skills – Multiplication

Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>• Times-table facts to <math>12 \times 12</math></li> <li>• Multiply by 1 and 0</li> <li>• Multiply 3 numbers</li> <li>• Factor pairs</li> <li>• Multiply by 10 and 100</li> <li>• Related facts</li> <li>• Mental strategies</li> <li>• Multiply a 2 or 3-digit number by a 1-digit number</li> <li>• Scaling</li> <li>• Correspondence problems</li> </ul>	<ul style="list-style-type: none"> <li>• Multiples and factors</li> <li>• Square and cube numbers</li> <li>• Multiply numbers up to 4 digits by a 1-digit number</li> <li>• Multiply numbers up to 4 digits by a 2-digit number</li> <li>• Multiply by 10, 100 and 1,000</li> <li>• Mental strategies</li> <li>• Multiply fractions by a whole number</li> <li>• Multiply mixed numbers by a whole number</li> <li>• Find the whole</li> </ul>	<ul style="list-style-type: none"> <li>• Multiply numbers up to 4 digits by a 2-digit number</li> <li>• Multiply by 10, 100 and 1,000</li> <li>• Order of operations</li> <li>• Multiply decimals by integers</li> <li>• Multiply fractions by fractions</li> <li>• Find the whole</li> <li>• Calculations involving ratio</li> </ul>

# Multiplication

<p><b>Year 5</b></p>	<ul style="list-style-type: none"> <li>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li> <li>Recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)</li> <li>Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.</li> <li>Multiply numbers mentally drawing upon known facts.</li> <li>Multiply whole numbers and those involving decimals by 10, 100 and 1000</li> <li>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</li> </ul>																																
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>																																
<p><b>Multiples and factors</b></p> <p>Encourage children to notice patterns and make links with known facts.</p>	<p>... is a multiple of ... because ... × ... = ...</p>  <table border="1" data-bbox="607 1015 1072 1152"> <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> </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	<p>... is a factor of ... because ... × ... = ...</p>  1 × 8  2 × 4 <p>1, 2, 4 and 8 are factors of 8</p>	<p>The common factors of ... and ... are ...</p> <p>Factors of 20      Factors of 12</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																								
<p><b>Square and cube numbers</b></p>	<p>... squared means ... × ...</p>  1 × 1 1 <sup>2</sup> = 1  2 × 2 2 <sup>2</sup> = 4  3 × 3 3 <sup>2</sup> = 9  4 × 4 4 <sup>2</sup> = 16		<p>... cubed means ... × ... × ...</p>  1 × 1 × 1 1 <sup>3</sup> = 1  2 × 2 × 2 2 <sup>3</sup> = 8  3 × 3 × 3 3 <sup>3</sup> = 27																														



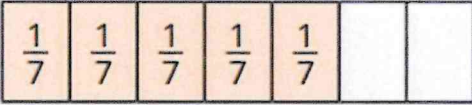

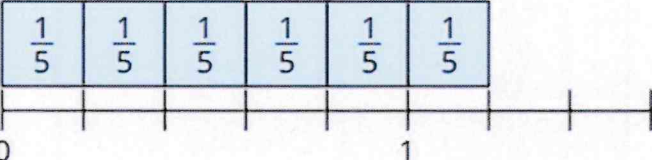
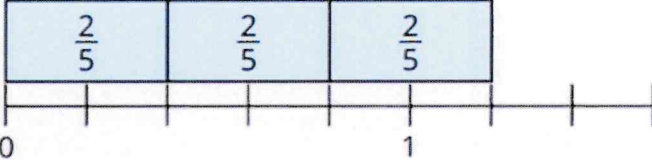
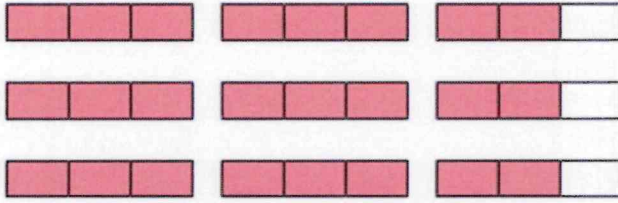


# Multiplication

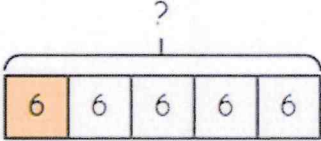
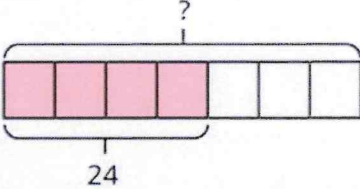
Progression of skills	Key representations																										
<p><b>Multiply by 10, 100 and 1,000</b></p> <p>Some children may over-generalise that multiplying by a power of 10 always results in adding zeros. This will cause issues later when multiplying decimals.</p>	<p>To multiply by 10/100/1,000, I move all the digits ... places to the left. ... is 10/100/1,000 times the size of ...</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <table border="1" style="text-align: center; border-collapse: collapse;"> <tr> <th style="width: 20px;">M</th> <th style="width: 20px;">HTh</th> <th style="width: 20px;">TTh</th> <th style="width: 20px;">Th</th> <th style="width: 20px;">H</th> <th style="width: 20px;">T</th> <th style="width: 20px;">O</th> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td></td> <td>● ●</td> <td>● ● ● ●</td> <td>● ● ● ●</td> </tr> </table> <table border="1" style="text-align: center; border-collapse: collapse;"> <tr> <th style="width: 20px;">Th</th> <th style="width: 20px;">H</th> <th style="width: 20px;">T</th> <th style="width: 20px;">O</th> <th style="width: 20px;">Tth</th> <th style="width: 20px;">Hth</th> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td>● ● ● ●</td> <td>● ● ● ●</td> <td>● ● ● ●</td> </tr> </table> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: left;"> <p><math>234 \times 10 = 2,340</math></p> <p><math>234 \times 100 = 23,400</math></p> <p><math>234 \times 1,000 = 234,000</math></p> </div> <div style="text-align: left;"> <p><math>2.34 \times 10 = 23.4</math></p> <p><math>2.34 \times 100 = 234</math></p> <p><math>2.34 \times 1,000 = 2,340</math></p> </div> </div>	M	HTh	TTh	Th	H	T	O					● ●	● ● ● ●	● ● ● ●	Th	H	T	O	Tth	Hth				● ● ● ●	● ● ● ●	● ● ● ●
M	HTh	TTh	Th	H	T	O																					
				● ●	● ● ● ●	● ● ● ●																					
Th	H	T	O	Tth	Hth																						
			● ● ● ●	● ● ● ●	● ● ● ●																						
<p><b>Mental strategies</b></p> <p>Children continue to use efficient mental strategies such as partitioning and knowledge of factor pairs and related facts to multiply.</p>	<p>The most efficient strategy to calculate ... <math>\times</math> ... is ... To calculate ... <math>\times</math> 12, I can do ... <math>\times</math> ... <math>\times</math> ...</p> <p>For example: <math>121 \times 12</math></p> <p>I could calculate <math>100 \times 12</math> plus <math>20 \times 12</math> plus <math>1 \times 12</math></p> <p>I could calculate <math>121 \times 10</math> plus <math>121 \times 2</math></p> <p>I could calculate <math>121 \times 6 \times 2</math></p> <p>I could calculate <math>121 \times 4 \times 3</math></p>																										



# Multiplication

Progression of skills	Key representations
<p><b>Multiply fractions by a whole number</b></p> <p>Make links with repeated addition.</p> <p>E.g. <math>\frac{1}{5} \times 4 = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}</math></p>	<p>To multiply a fraction by an integer, I multiply the numerator by the integer and the denominator remains the same.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <math display="block">\frac{1}{7} \times 5 = \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{5}{7}</math> </div> <div style="text-align: center;">  <math display="block">\frac{2}{7} \times 3 = \frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7}</math> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  <math display="block">\frac{1}{5} \times 6 = \frac{6}{5} = 1\frac{1}{5}</math> </div> <div style="text-align: center;">  <math display="block">\frac{2}{5} \times 3 = \frac{6}{5} = 1\frac{1}{5}</math> </div> </div>
<p><b>Multiply mixed numbers by a whole number</b></p>	<p>I can partition <math>\begin{array}{ c } \hline \square \\ \hline \square \\ \hline \end{array}</math> into <math>\begin{array}{ c } \hline \square \\ \hline \end{array}</math> and <math>\begin{array}{ c } \hline \square \\ \hline \square \\ \hline \end{array}</math></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <math display="block">2\frac{2}{3} \times 3</math> <math display="block">2 \times 3 = 6 \quad \frac{2}{3} \times 3 = \frac{6}{3} = 2</math> <math display="block">2\frac{2}{3} \times 3 = 6 + 2 = 8</math> </div> </div>

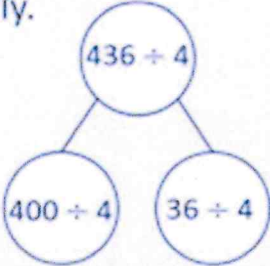
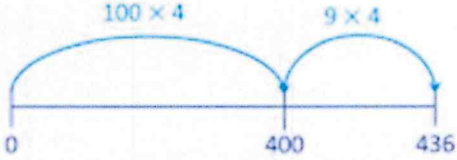
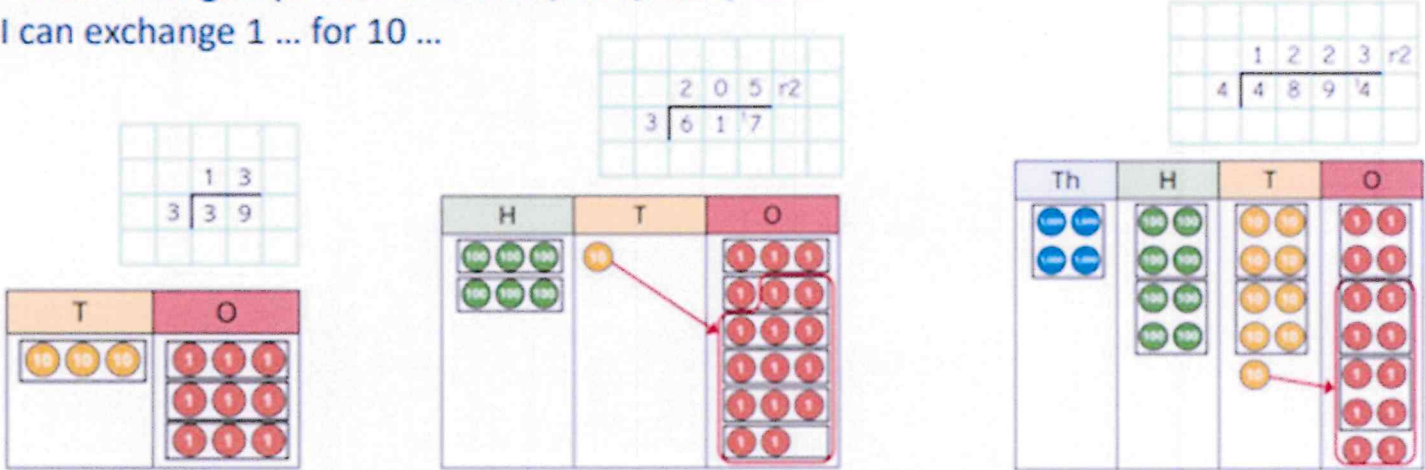
# Multiplication

Progression of skills	Key representations	
<p><b>Find the whole</b></p> <p>Children multiply to find the whole from a given part.</p>	<p>If <math>\frac{1}{\square}</math> is ... , then the whole is ... <math>\times</math> ...</p> <p><math>\frac{1}{5}</math> of ___ = 6</p>  <p><math>5 \times 6 = 30</math></p> <p><math>\frac{1}{5}</math> of <b>30</b> = 6</p>	<p>If <math>\frac{\square}{\square}</math> is ... , then <math>\frac{1}{\square}</math> is ... and the whole is ... <math>\times</math> ...</p> <p><math>\frac{4}{7}</math> of ___ = 24</p>  <p><math>\frac{1}{7} = 24 \div 4 = 6</math></p> <p><math>7 \times 6 = 42</math></p> <p><math>\frac{4}{7}</math> of <b>42</b> = 24</p>



# Progression of skills – Division

Year 4	Year 5	Year 6
<ul style="list-style-type: none"><li>• Division facts to <math>12 \times 12</math></li><li>• Divide a number by 1 and itself</li><li>• Related facts</li><li>• Divide a 2 or 3-digit number by a 1-digit number</li><li>• Divide by 10 and 100</li></ul>	<ul style="list-style-type: none"><li>• Mental strategies</li><li>• Divide numbers up to 4 digits by a 1-digit number</li><li>• Divide by 10, 100 and 1,000</li><li>• Fraction of an amount</li></ul>	<ul style="list-style-type: none"><li>• Short division</li><li>• Mental strategies</li><li>• Long division</li><li>• Order of operations</li><li>• Divide by 10, 100 and 1,000</li><li>• Divide decimals by integers</li><li>• Decimal and fraction equivalents</li><li>• Divide a fraction by an integer</li><li>• Fraction of an amount</li><li>• Calculate percentages</li><li>• Calculations involving ratio</li></ul>

<p><b>Year 5</b></p>	<ul style="list-style-type: none"> <li>• Divide numbers mentally drawing upon known facts.</li> <li>• Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.</li> <li>• Divide whole numbers and those involving decimals by 10, 100 and 1,000</li> </ul>		
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>		
<p><b>Mental strategies</b></p>	<p>I can partition ... into ... and ... to help me to divide more easily.</p> 	<p>I can show groups of ... on a number line.</p> 	<p>To divide by ..., I can divide by ... and then divide the result by ...</p> $436 \div 4 = 436 \div 2 \div 2$ $436 \div 2 = 218$ $218 \div 2 = 109$
<p><b>Divide numbers up to 4 digits by a 1-digit number</b></p>	<p>There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ...</p> 		



# Division

Progression of skills	Key representations																																																																					
<p><b>Divide by 10, 100 and 1,000</b></p> <p>Encourage children to notice that dividing by 100 is the same as dividing by 10 twice, and that dividing by 1,000 is the same as dividing by 10 three times.</p>	<p>To divide by 10/100/1,000, I move all the digits ... places to the right. ... is one-tenth/one-hundredth/one-thousandth the size of ...</p> <table border="1" data-bbox="622 443 1079 544"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr> <tr><td></td><td>●</td><td>●●</td><td></td><td>●</td><td></td></tr> </table> <table border="1" data-bbox="622 560 1079 660"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr> <tr><td></td><td></td><td>●</td><td>●●</td><td>●</td><td></td></tr> </table> <table border="1" data-bbox="622 676 1079 777"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr> <tr><td></td><td></td><td></td><td>●</td><td>●●</td><td>●</td></tr> </table> <table border="1" data-bbox="622 793 1079 893"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●●</td></tr> </table> <p><math>120 \div 10 = 12</math></p> <p><math>120 \div 100 = 1.2</math></p> <p><math>120 \div 1,000 = 0.12</math></p>	Th	H	T	O	Tth	Hth		●	●●		●		Th	H	T	O	Tth	Hth			●	●●	●		Th	H	T	O	Tth	Hth				●	●●	●	Th	H	T	O	Tth	Hth					●	●●	<p>If <math>\frac{1}{\square}</math> is ... , then the whole is ... <math>\times</math> ...</p> <table border="1" data-bbox="1451 1007 1771 1150"> <tr><td></td><td>?</td></tr> <tr><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr> </table> <p><math>\frac{1}{5}</math> of <math>\underline{\quad}</math> = 6</p> <table border="1" data-bbox="1451 1182 1816 1382"> <tr><td></td><td>?</td></tr> <tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr> <tr><td colspan="4">24</td></tr> </table> <p><math>\frac{4}{7}</math> of <math>\underline{\quad}</math> = 24</p>		?	6	6	6	6	6		?	■	■	■	■	■	■	■	24			
Th	H	T	O	Tth	Hth																																																																	
	●	●●		●																																																																		
Th	H	T	O	Tth	Hth																																																																	
		●	●●	●																																																																		
Th	H	T	O	Tth	Hth																																																																	
			●	●●	●																																																																	
Th	H	T	O	Tth	Hth																																																																	
				●	●●																																																																	
	?																																																																					
6	6	6	6	6																																																																		
	?																																																																					
■	■	■	■	■	■	■																																																																
24																																																																						
<p><b>Fraction of an amount</b></p> <p>Bar models support children to understand that to find a fraction of an amount, we divide by the denominator and multiply by the numerator.</p>	<p>To find <math>\frac{\square}{\square}</math> of ... , I need to divide by ... and multiply by ...</p> <table border="1" data-bbox="622 1075 1032 1158"> <tr><td>●●</td><td>●●</td><td>●●</td><td>●●</td><td>●●</td><td>●●</td></tr> </table> <table border="1" data-bbox="1061 1075 1406 1158"> <tr><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> </table> <p><math>\frac{1}{5}</math> of 20 =</p> <p><math>\frac{3}{5}</math> of 20 =</p> <p><math>\frac{1}{4}</math> of 84 =</p> <p><math>\frac{3}{4}</math> of 84 =</p>	●●	●●	●●	●●	●●	●●	10	10	10	10	10	10	1	1	1	1	1	1	<p>If <math>\frac{1}{\square}</math> is ... , then the whole is ... <math>\times</math> ...</p> <table border="1" data-bbox="1451 1007 1771 1150"> <tr><td></td><td>?</td></tr> <tr><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr> </table> <p><math>\frac{1}{5}</math> of <math>\underline{\quad}</math> = 6</p> <table border="1" data-bbox="1451 1182 1816 1382"> <tr><td></td><td>?</td></tr> <tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr> <tr><td colspan="4">24</td></tr> </table> <p><math>\frac{4}{7}</math> of <math>\underline{\quad}</math> = 24</p>		?	6	6	6	6	6		?	■	■	■	■	■	■	■	24																																	
●●	●●	●●	●●	●●	●●																																																																	
10	10	10	10	10	10																																																																	
1	1	1	1	1	1																																																																	
	?																																																																					
6	6	6	6	6																																																																		
	?																																																																					
■	■	■	■	■	■	■																																																																
24																																																																						