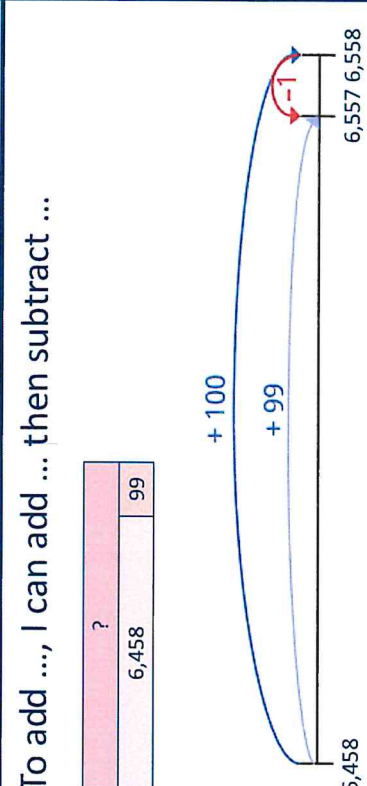
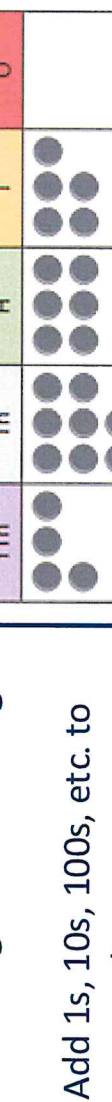
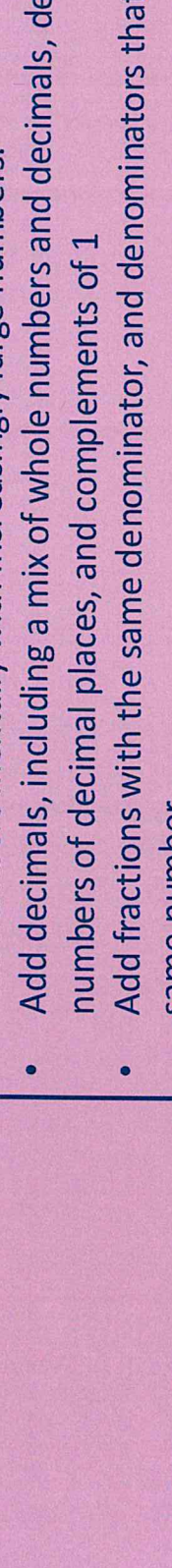
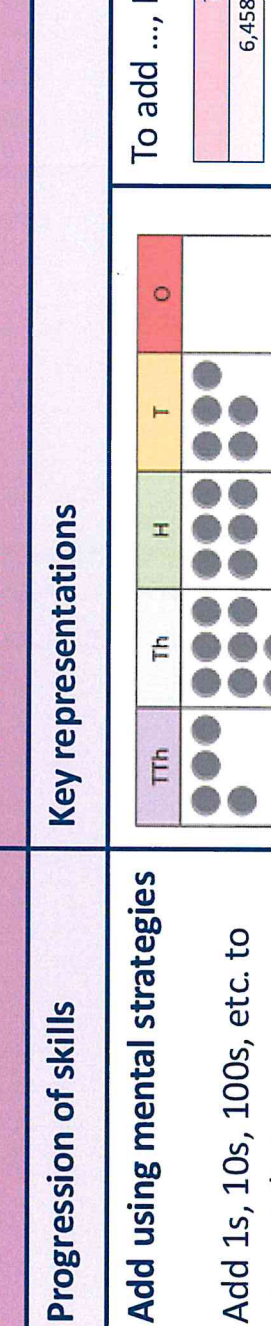



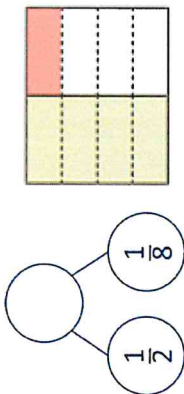
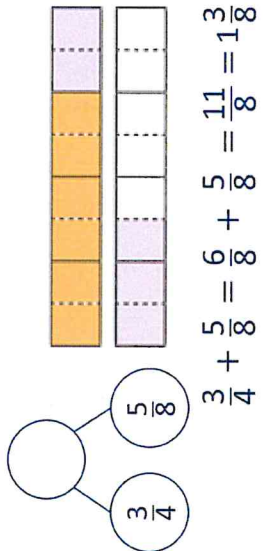
Addition

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

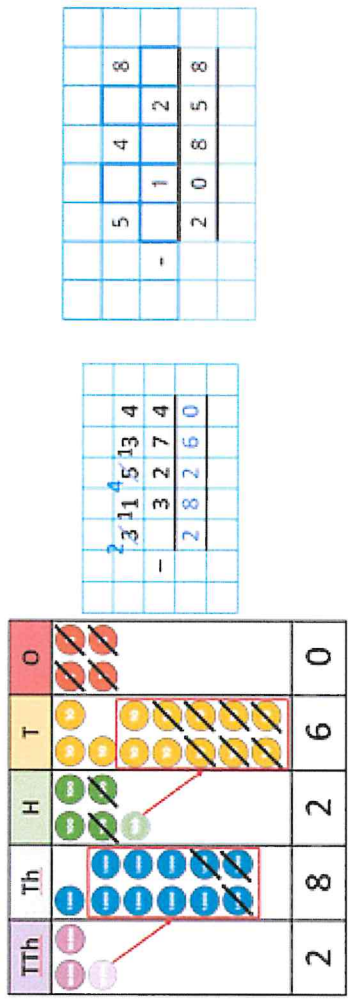
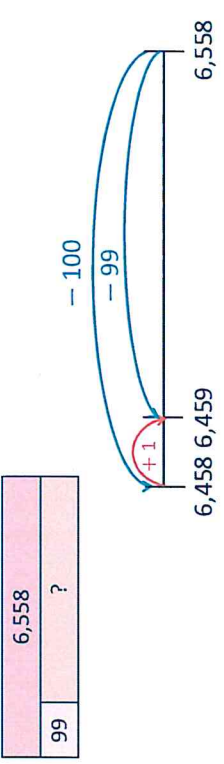
Addition

Progression of skills	Key representations																																					
<p>Add decimals with up to 2 decimal places</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;"> <p>Ones Tenths Hundredths</p> <table border="1"> <tr> <td>1</td><td>1</td><td>0.1</td><td>0.1</td><td>0.1</td><td>0.01</td><td>0.01</td> </tr> <tr> <td>1</td><td>1</td><td>0.1</td><td>0.1</td><td>0.1</td><td>0.01</td><td>0.01</td> </tr> <tr> <td>1</td><td>1</td><td>0.1</td><td>0.1</td><td>0.1</td><td>0.01</td><td>0.01</td> </tr> </table> <p>4 + 4 = 8 3 + 2 = 5</p> </div> <div style="text-align: center;"> <table border="1"> <tr> <td>1</td><td>2</td><td>8</td><td>1</td> </tr> <tr> <td>+</td><td>2</td><td>5</td><td>4</td> </tr> <tr> <td colspan="4"><hr/></td> </tr> <tr> <td></td><td></td><td></td><td></td> </tr> </table> </div> </div>	1	1	0.1	0.1	0.1	0.01	0.01	1	1	0.1	0.1	0.1	0.01	0.01	1	1	0.1	0.1	0.1	0.01	0.01	1	2	8	1	+	2	5	4	<hr/>							
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<p>Complements to 1</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;"> <p>0.3 + <input type="text"/> = 1</p> </div> <div style="text-align: center;"> <p>0.35 + <input type="text"/> = 1</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <table border="1"> <tr> <td style="background-color: #f8d7da;">71</td> <td style="background-color: #d1ecf1;">100</td> </tr> <tr> <td colspan="2" style="text-align: center;">1</td> </tr> </table> </div> <div style="text-align: center;"> <table border="1"> <tr> <td style="background-color: #f8d7da;">0.71</td> <td style="background-color: #d1ecf1;">1</td> </tr> <tr> <td colspan="2" style="text-align: center;">1</td> </tr> </table> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>1 + <input type="text"/> = 1</p> </div> <div style="text-align: center;"> <p>0.4 + <input type="text"/> = 1</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>1 + <input type="text"/> = 1</p> </div> <div style="text-align: center;"> <p>0.44 + <input type="text"/> = 1</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>4 + 6 = 10</p> </div> <div style="text-align: center;"> <p>0.4 + 0.6 = 1</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>44 + 56 = 100</p> </div> <div style="text-align: center;"> <p>0.44 + 0.56 = 1</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>444 + 556 = 1,000</p> </div> <div style="text-align: center;"> <p>0.444 + 0.556 = 1</p> </div> </div>	71	100	1		0.71	1	1																														
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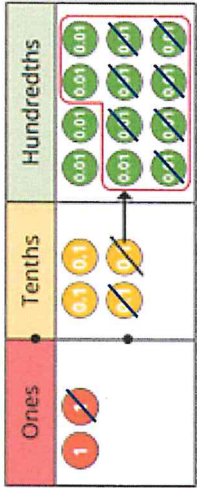
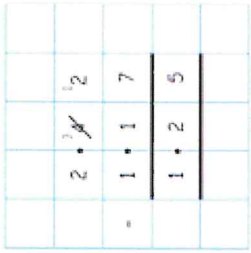
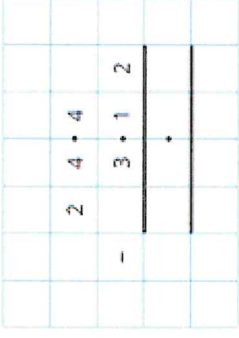
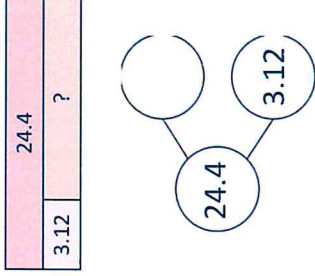
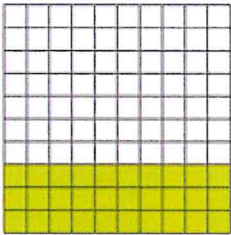
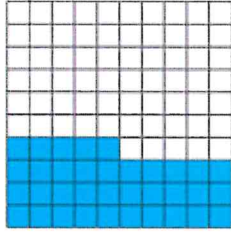
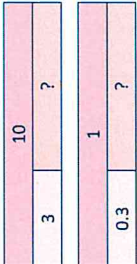

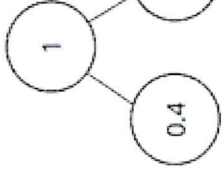
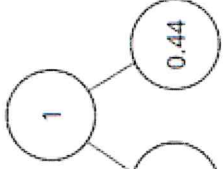
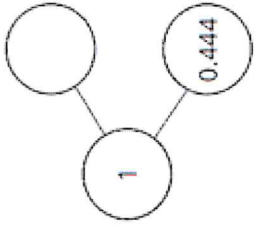
Addition

Progression of skills	Key representations
<p>Add fractions with denominators that are a multiple of one another</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: center;"> <div style="text-align: center;">  <p>$\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}$</p> </div> <div style="text-align: center;">  <p>$\frac{3}{4} + \frac{5}{8} = \frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$</p> </div> </div>

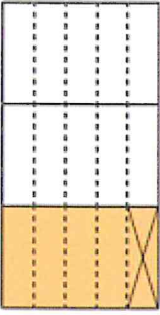
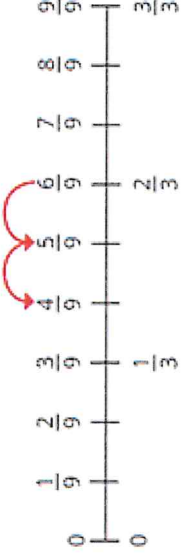



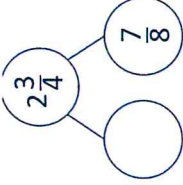
Subtraction

<p>Year 5</p>	<ul style="list-style-type: none"> Subtract whole numbers with more than 4 digits. Subtract numbers mentally with increasingly large numbers. Subtract decimals, including a mix of whole numbers and decimals, and complements of 1 Subtract fractions with the same denominator, and denominators that are multiples of the same number.
<p>Progression of skills</p>	<p>Key representations</p>
<p>Subtract whole numbers with more than 4 digits</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>Subtract using mental strategies</p> <p>Subtract 1s, 10s, 100s etc from any number. Use number bonds and related facts.</p>	<p>To subtract ..., I can subtract ... then add ...</p>  <p>6,558 - 99 = 6,459</p> <p>48,650 - 300 = 48,650 - 30,000 = 48,650 - 30 =</p>

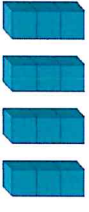
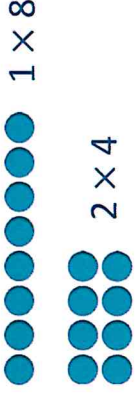
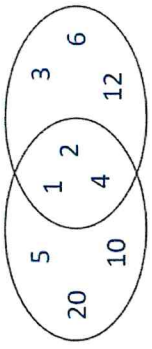
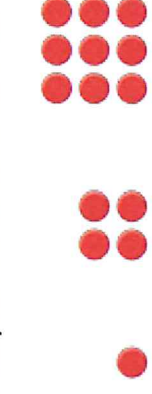

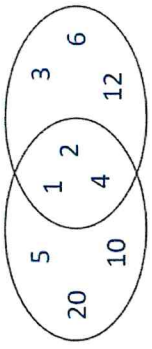
Subtraction

Progression of skills	Key representations
<p>Subtract decimals with up to 2 decimal places</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>Complements to 1</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>	       <p> $10 - 4 = 6$ $1 - 0.4 = 0.6$ $100 - 44 = 56$ $1 - 0.44 = 0.56$ $1,000 - 444 = 556$ $1 - 0.444 = 0.556$ </p>

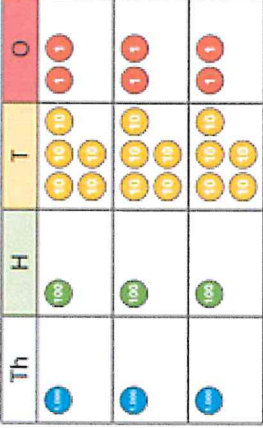
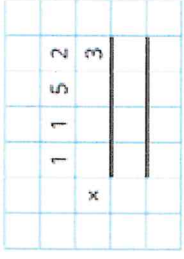
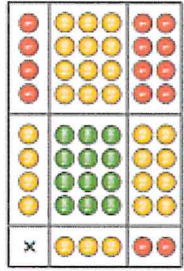
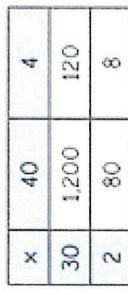
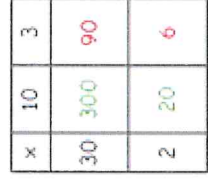
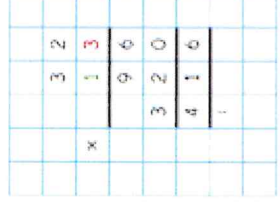
Subtraction

Progression of skills	Key representations
<p>Subtract fractions with denominators that are a multiple of one another</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> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  $\frac{1}{3} - \frac{1}{15} = \frac{5}{15} - \frac{1}{15} = \frac{4}{15}$ </div> <div style="text-align: center;">  $\frac{2}{3} - \frac{2}{9} = \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$ </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="text-align: center; margin-top: 20px;">  </div>

Multiplication

<p>Year 5</p>	<ul style="list-style-type: none"> Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) 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. Multiply numbers mentally drawing upon known facts. Multiply whole numbers and those involving decimals by 10, 100 and 1000 Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. 																																
<p>Progression of skills</p>	<p>Key representations</p>																																
<p>Multiples and factors</p> <p>Encourage children to notice patterns and make links with known facts.</p>	<p>... is a multiple of ... because</p> <p>... X ... = ...</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> </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> <p>... X ... = ...</p>  <p>1, 2, 4 and 8 are factors of 8</p>	<p>The common factors of ... and ... are ...</p>  <p>Factors of 20</p> <p>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>Square and cube numbers</p>	<p>... squared means ... X ...</p>  <p>1 x 1 = 1 2 x 2 = 4 3 x 3 = 9 4 x 4 = 16</p> <p>1² = 1 2² = 4 3² = 9 4² = 16</p>	<p>... cubed means ... X ... X ...</p>  <p>1 x 1 x 1 = 1 2 x 2 x 2 = 8 3 x 3 x 3 = 27</p> <p>1³ = 1 2³ = 8 3³ = 27</p>	<p>The common factors of ... and ... are ...</p>  <p>Factors of 20</p> <p>Factors of 12</p>																														

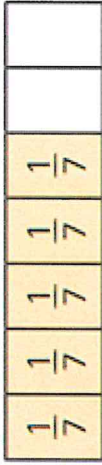

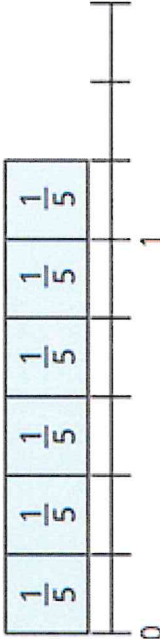
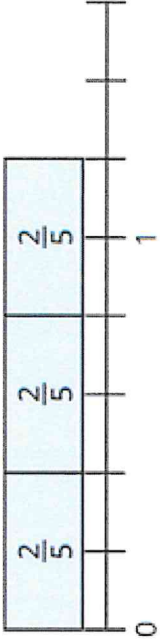



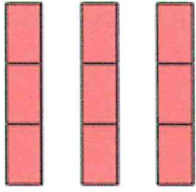
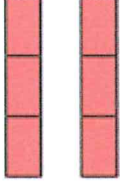
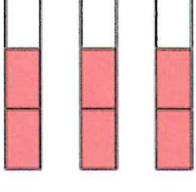


Multiplication

Progression of skills	Key representations
<p>Multiply numbers up to 4 digits by a 1-digit number</p> <p>This builds on the short multiplication method introduced in Y4</p>	<p>To multiply a 4-digit number by ..., I multiply the ones by ..., the tens by ..., the hundreds by ... and the thousands by ...</p>  
<p>Multiply numbers up to 4 digits by a 2-digit number</p> <p>Numbers are first partitioned using an area model then long multiplication is introduced for the first time.</p>	<p>I can partition ... into ... and ...</p>   <p>$32 \times 44 = 1,200 + 80 + 120 + 8$ $32 \times 44 = 1,408$</p> <p>First, I multiply by the ... Then I multiply by the ...</p>   <p>$300 + 90 + 20 + 6 = 416$</p>

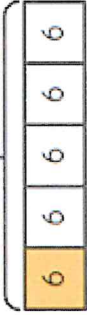
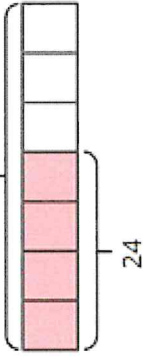
Multiplication

Progression of skills	Key representations																										
<p>Multiply by 10, 100 and 1,000</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> <table border="1"> <tr> <td>M</td> <td>HTh</td> <td>TTh</td> <td>Th</td> <td>H</td> <td>T</td> <td>O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>● ●</td> <td>● ● ●</td> <td>● ● ● ●</td> </tr> </table> <table border="1"> <tr> <td>Th</td> <td>H</td> <td>T</td> <td>O</td> <td>TTh</td> <td>HTh</td> </tr> <tr> <td></td> <td></td> <td></td> <td>● ● ●</td> <td>● ● ● ●</td> <td>● ● ● ●</td> </tr> </table> <p> $234 \times 10 = 2,340$ $234 \times 100 = 23,400$ $234 \times 1,000 = 234,000$ </p> <p> $2.34 \times 10 = 23.4$ $2.34 \times 100 = 234$ $2.34 \times 1,000 = 2,340$ </p>	M	HTh	TTh	Th	H	T	O					● ●	● ● ●	● ● ● ●	Th	H	T	O	TTh	HTh				● ● ●	● ● ● ●	● ● ● ●
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<p>Mental strategies</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 ... \times ... is ... To calculate ... \times 12, I can do ... \times ... \times ...</p> <p>For example: 121×12</p> <p> I could calculate 100×12 plus 20×12 plus 1×12 I could calculate 121×10 plus 121×2 I could calculate $121 \times 6 \times 2$ I could calculate $121 \times 4 \times 3$ </p>																										

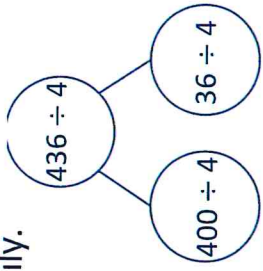
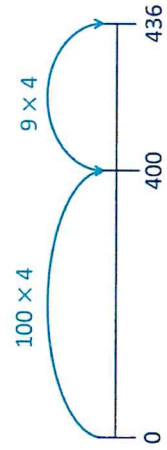
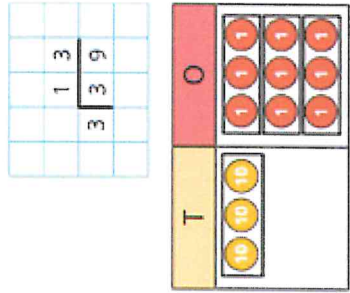
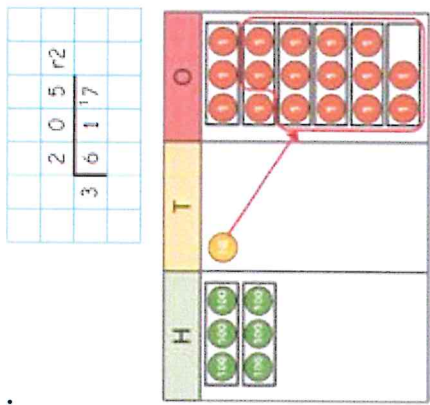
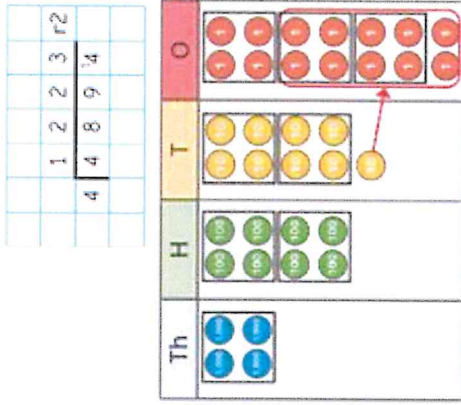
Multiplication

Progression of skills	Key representations
<p>Multiply fractions by a whole number</p> <p>Make links with repeated addition. E.g. $\frac{1}{5} \times 4 = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$</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;">  $\frac{1}{7} \times 5 = \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{5}{7}$ </div> <div style="text-align: center;">  $\frac{2}{7} \times 3 = \frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7}$ </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  $\frac{1}{5} \times 6 = \frac{6}{5} = 1\frac{1}{5}$ </div> <div style="text-align: center;">  $\frac{2}{5} \times 3 = \frac{6}{5} = 1\frac{1}{5}$ </div> </div>
<p>Multiply mixed numbers by a whole number</p>	<p>I can partition  into  and </p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  $2\frac{2}{3} \times 3$ </div> <div style="text-align: center;">  $2 \times 3 = 6$ </div> <div style="text-align: center;">  $2\frac{2}{3} \times 3 = 6 + 2 = 8$ </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  $\frac{2}{3} \times 3 = \frac{6}{3} = 2$ </div> <div style="text-align: center;">  $\frac{2}{3} \times 3 = \frac{6}{3} = 2$ </div> </div>

Multiplication

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

Division

<p>Year 5</p>	<ul style="list-style-type: none"> • Divide numbers mentally drawing upon known facts. • 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. • Divide whole numbers and those involving decimals by 10, 100 and 1,000 		
<p>Progression of skills</p>	<p>Key representations</p>		
<p>Mental strategies</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>Divide numbers up to 4 digits by a 1-digit number</p> <p>The short division method is introduced for the first time.</p>	<p>There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ...</p> 		

Division

Progression of skills	Key representations																																																
<p>Divide by 10, 100 and 1,000</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"> <tr><td>Th</td><td>H</td><td>T</td><td>O</td><td>Tth</td><td>Hth</td></tr> <tr><td></td><td></td><td>●●</td><td>●</td><td></td><td></td></tr> </table> <p style="text-align: center;">$120 \div 10 = 12$</p> <table border="1"> <tr><td>Th</td><td>H</td><td>T</td><td>O</td><td>Tth</td><td>Hth</td></tr> <tr><td></td><td></td><td>●</td><td>●●</td><td>●</td><td></td></tr> </table> <p style="text-align: center;">$120 \div 100 = 1.2$</p> <table border="1"> <tr><td>Th</td><td>H</td><td>T</td><td>O</td><td>Tth</td><td>Hth</td></tr> <tr><td></td><td></td><td></td><td>●</td><td>●●</td><td>●●</td></tr> </table> <p style="text-align: center;">$120 \div 1,000 = 0.12$</p> <table border="1"> <tr><td>Th</td><td>H</td><td>T</td><td>O</td><td>Tth</td><td>Hth</td></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●●</td></tr> </table>	Th	H	T	O	Tth	Hth			●●	●			Th	H	T	O	Tth	Hth			●	●●	●		Th	H	T	O	Tth	Hth				●	●●	●●	Th	H	T	O	Tth	Hth					●	●●
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<p>Fraction of an amount</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 $\frac{\square}{\square}$ of ... , I need to divide by ... and multiply by ...</p> <table border="1"> <tr><td>●●●</td><td>●●●</td><td>●●●</td><td>●●●</td></tr> </table> <table border="1"> <tr><td>●●●</td><td>●●●</td><td>●●●</td><td>●●●</td><td>●●●</td><td>●●●</td></tr> </table> <p style="text-align: center;">$\frac{1}{5}$ of 20 = $\frac{1}{4}$ of 84 =</p> <p style="text-align: center;">$\frac{3}{5}$ of 20 = $\frac{3}{4}$ of 84 =</p> <p>If $\frac{1}{\square}$ is ... , then the whole is ... \times ...</p> <table border="1"> <tr><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr> </table> <p style="text-align: center;">$\frac{1}{5}$ of ___ = 6</p> <table border="1"> <tr><td>?</td><td>?</td><td>?</td><td>?</td><td>?</td><td>?</td></tr> </table> <p style="text-align: center;">$\frac{4}{7}$ of ___ = 24</p>	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	6	6	6	6	6	?	?	?	?	?	?																											
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