

Primary maths

# Calculation policy

Updated September 2024

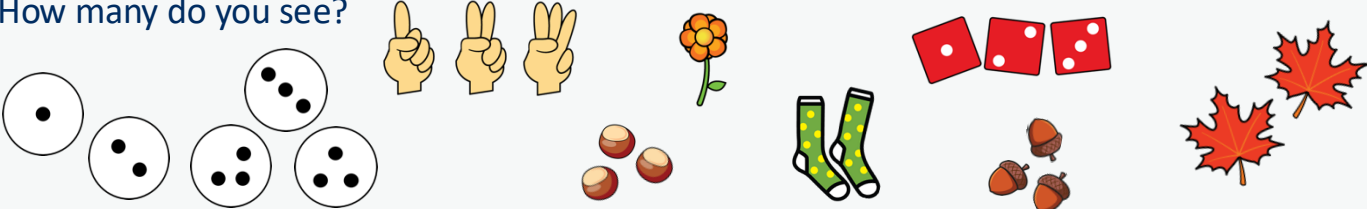

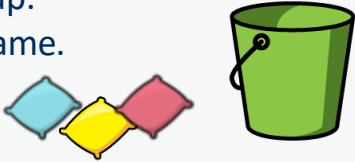
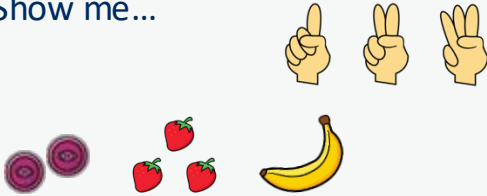
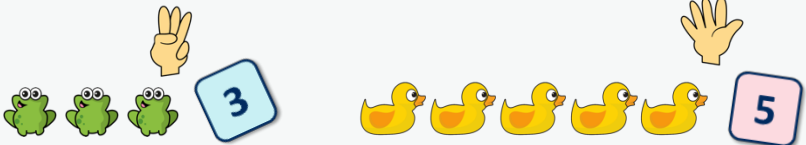

# Progression of skills - Addition

Year group	Skill
Nursery	<ul style="list-style-type: none"><li>• Subitise to 3</li><li>• Count how many</li><li>• Make numbers to 5</li><li>• Add 1 more (through songs and rhymes)</li></ul>
Reception	<ul style="list-style-type: none"><li>• Conceptually subitise to 5</li><li>• 1 more</li><li>• Notice the composition of numbers within 10</li><li>• Combine 2 groups</li><li>• Add more</li></ul>
Year 1	<ul style="list-style-type: none"><li>• Add together</li><li>• Add more</li><li>• Bonds within 10</li><li>• Related facts within 20</li><li>• Missing numbers</li></ul>

# Progression of skills - Addition

Year group	Skill
Year 2	<ul style="list-style-type: none"><li>• Add 1s to any number (related facts)</li><li>• Add three 1-digit numbers</li><li>• Add across a 10</li><li>• Add multiples of 10</li><li>• Add 10s to any number</li><li>• Add two 2-digit numbers (not across a ten)</li><li>• Add two 2-digit numbers (across a ten)</li><li>• Missing numbers</li></ul>
Year 3	<ul style="list-style-type: none"><li>• Add 1s, 10s and 100s to a 3-digit number</li><li>• Add two numbers (no exchange)</li><li>• Add two numbers across a 10 or 100</li><li>• Complements to 100</li><li>• Add fractions with the same denominator within 1 whole</li><li>• Calculate the duration of events</li></ul>


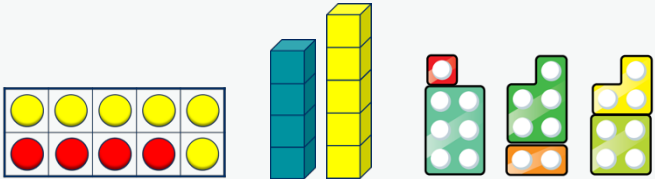
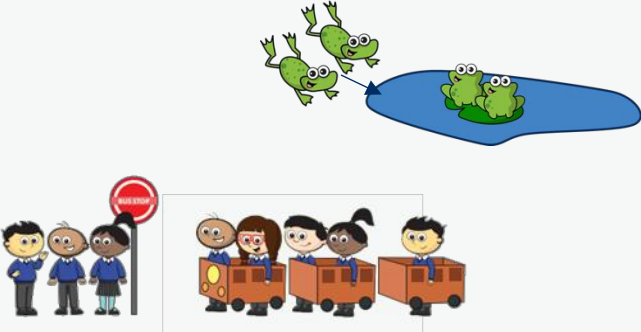
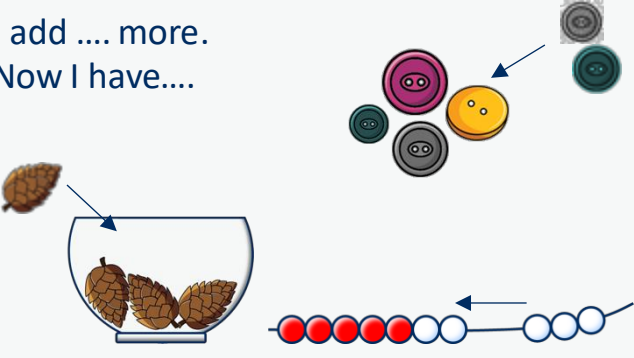
# Addition

<p><b>Nursery</b></p>	<ul style="list-style-type: none"> <li>• Begin to have an understanding of numbers to 5</li> <li>• We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.</li> </ul>	
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>	
<p><b>Subitise to 3</b></p> <p>Instantly see how many.</p>	<p>How many do you see?</p> 	
<p><b>Count how many</b></p> <p>Begin to count objects using 1-1 correspondence.</p>	<p>How many are there?</p> <p>1 2 3 4 5</p> 	<p>Count out ... from a larger group. E.g. Collect 3 beanbags for a game.</p> 
<p><b>Make numbers to 5</b></p> <p>Start by showing 1, 2 and 3 using fingers.</p>	<p>Show me...</p> 	<p>Begin to link numerals to quantities.</p> 
<p><b>Add 1 more</b></p> <p>Through stories, songs and rhymes.</p>	<p>How many do I have now?</p> 	

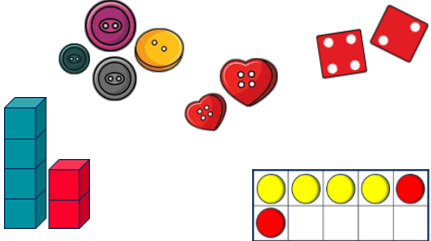
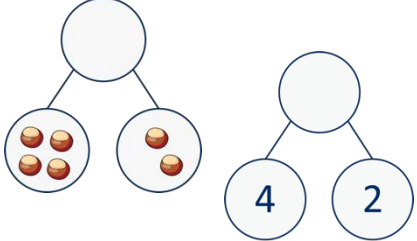
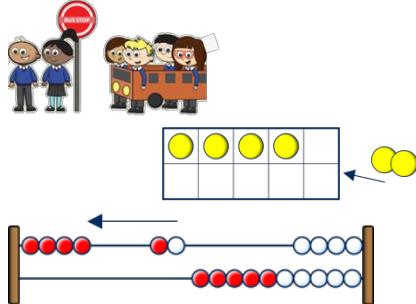
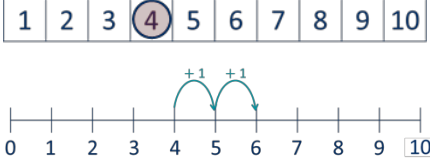
# Addition

<p><b>Reception</b></p>	<ul style="list-style-type: none"> <li>• Have a deep understanding of numbers to 10, including the composition of each number.</li> <li>• Subitise (recognise quantities without counting) up to 5</li> <li>• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.</li> </ul>	
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>	
<p><b>Conceptually subitise to 5</b></p> <p>Notice the parts that make up the whole.</p>	<p>What do you see? How do you see it?</p>	
<p><b>1 more</b></p> <p>Continue to link to stories, songs and rhymes.</p>	<p>1 more than ... is ...</p>	
<p><b>Notice the composition of numbers within 10</b></p> <p>Link to stories, songs and rhymes.</p>	<p>How many...? How many...? How many altogether?</p>	<p>How many ways can you make...?</p>

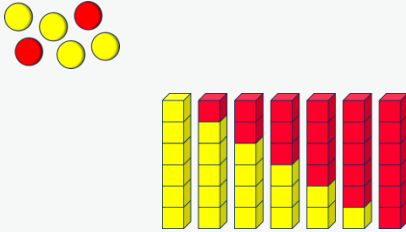
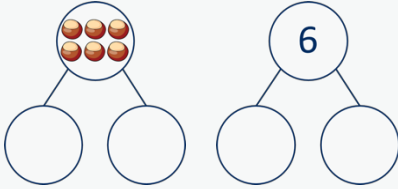
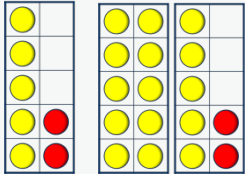
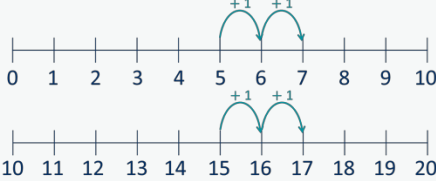
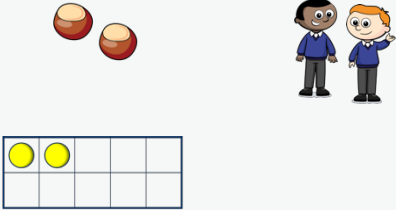
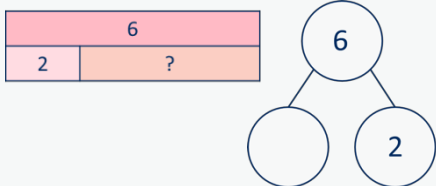

# Addition

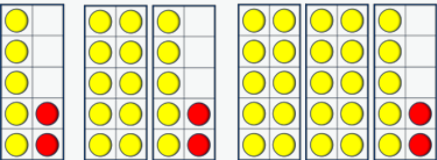
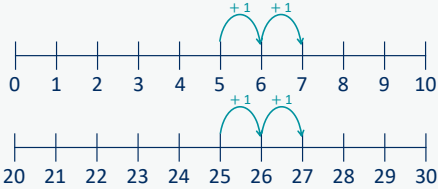
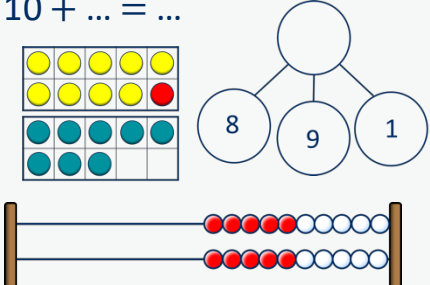
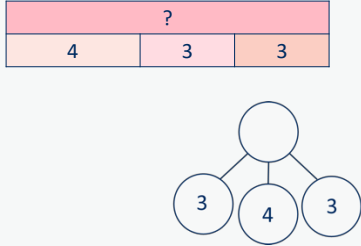
Progression of skills	Key representations	
<p><b>Combine 2 groups</b></p> <p>2 groups are combined to find the total.</p>	<p>There are .... There are .... There are .... altogether.</p> 	<p>.... and .... make ....</p> 
<p><b>Add more</b></p> <p>A quantity is increased.</p>	<p>First... Then.... Now....</p> 	<p>I have .... I add .... more. Now I have....</p> 

# Addition

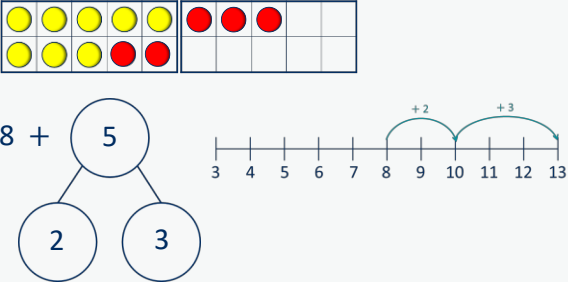
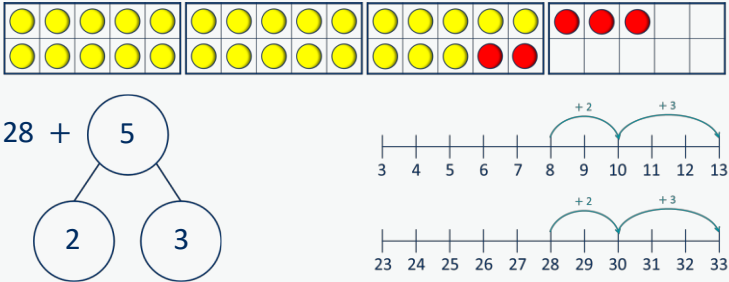
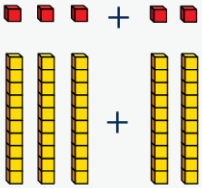
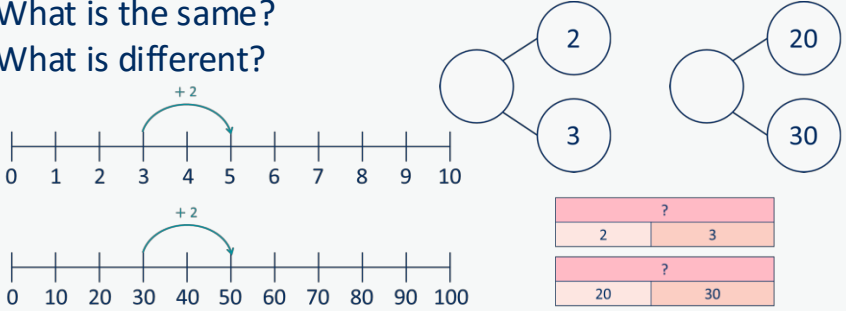
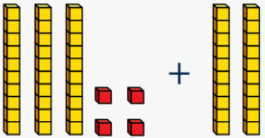
<p><b>Year 1</b></p>	<ul style="list-style-type: none"> <li>• Read, write and interpret mathematical statements involving addition (+) and equals (=) signs.</li> <li>• Represent and use number bonds within 20</li> <li>• Add 1-digit and 2-digit numbers to 20, including zero.</li> <li>• Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square + 2</math></li> </ul>		
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>		
<p><b>Add together</b> (aggregation)</p> <p>2 quantities are combined to find the total.</p>	<p>There are ... There are ... There are ... altogether.</p> 	<p>... is a part. ... is a part. ... is the whole.</p> 	<p>... plus ... is equal to ... ... is equal to ... + ...</p> $4 + 2 = 6$ $2 + 4 = 6$ $6 = 4 + 2$ $6 = 2 + 4$
<p><b>Add more</b> (augmentation)</p> <p>A quantity is increased.</p>	<p>First... Then... Now...</p> 	<p>I start at ... I jump on ... I land on ...</p> 	<p>... plus ... is equal to ... ... is equal to ... + ...</p> $4 + 2 = 6$ $2 + 4 = 6$ $6 = 4 + 2$ $6 = 2 + 4$

# Addition


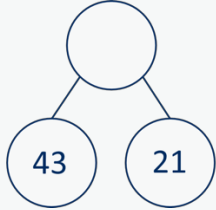
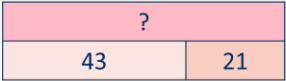
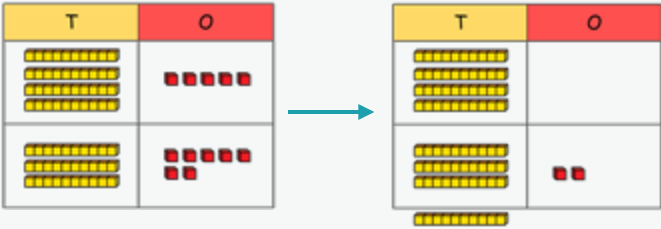
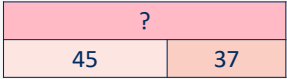
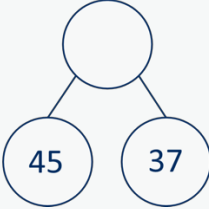
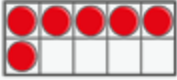
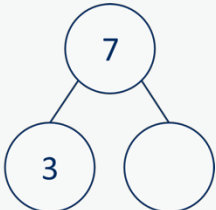
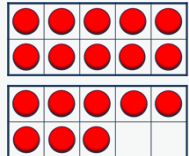
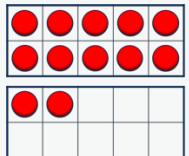
Progression of skills	Key representations		
<p><b>Bonds within 10</b></p> <p>Include bonds for each number within 10</p> <p>Encourage children to notice patterns.</p>	<p>... is made of ... and ... ... and ... make ...</p> 	<p>... can be partitioned into ... and ...</p> 	<p>... plus ... is equal to ...</p> $6 + 0 = 6$ $5 + 1 = 6$ $4 + 2 = 6$ $3 + 3 = 6$ $2 + 4 = 6$ $1 + 5 = 6$ $0 + 6 = 6$
<p><b>Related facts within 20</b></p> <p>Make links to known facts.</p>	<p>I know that ... and ... = ... so ... and ... = ...</p> 	<p>... more than ... is ... so ... more than ... is ...</p> 	<p>What patterns do you notice?</p> $5 + 2 = 7$ $15 + 2 = 17$ $7 = 5 + 2$ $17 = 15 + 2$
<p><b>Missing numbers</b></p> <p>Make links to known facts.</p>	<p>How many more do you need to make ...?</p> 	<p>If ... is the whole and ... is a part, the other part must be...</p> 	<p>... plus ... is equal to ...</p> $2 + \square = 6$ $6 = 2 + \square$ 

<p><b>Year 2</b></p>	<ul style="list-style-type: none"> <li>Recall and use addition facts to 20 fluently, and derive and use related facts up to 100</li> <li>Add numbers using concrete objects, pictorial representations, and mentally, including:             <ul style="list-style-type: none"> <li>a two-digit number and 1s</li> <li>a two-digit number and 10s</li> <li>2 two-digit numbers</li> <li>adding 3 one-digit numbers</li> </ul> </li> <li>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>		
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>		
<p><b>Add ones to any number</b> (related facts)</p> <p>Make links to known facts.</p>	<p>I know that ... and ... = ... so ... and ... = ...</p> 	<p>... more than ... is ... so ... more than ... is ...</p> 	<p>What do you notice? Can you continue the pattern?</p> $5 + 2 = 7$ $15 + 2 = 17$ $25 + 2 = 27...$
<p><b>Add three 1-digit numbers</b></p> <p>Prompt children to understand that addition can be done in any order and to make links to known facts.</p>	<p>... and ... are a bond to 10 <math>10 + ... = ...</math></p> 	<p>Double ... + ... = ...</p> 	<p>What do you notice? Which addition is the easiest to calculate?</p> $8 + 9 + 1 =$ $8 + 1 + 9 =$ $9 + 1 + 8 =$

# Addition

Progression of skills	Key representations																																																													
<p><b>Add across a 10</b></p> <p>Partition the number being added to make a full ten.</p>	<p>... can be partitioned into ... and ...</p>  <p><math>8 + 5 = 13</math></p>	<p>I add ... to get to ... then I add ...</p> <p><math>8 + 5 = 13</math> <math>28 + 5 = 33</math></p> 																																																												
<p><b>Add multiples of 10</b></p> <p>Make links to known facts within ten.</p>	<p>... ones + ... ones = ... ones so ... tens + ... tens = ... tens</p>  <p><math>3 + 2 = 5</math> <math>30 + 20 = 50</math></p>	<p>What is the same? What is different?</p> 																																																												
<p><b>Add 10s to any number</b></p> <p>Make links to known facts.</p>	<p>... tens + ... tens = ... tens ... tens and ... ones = ...</p> 	<p>To add ... I need to add 10 ... times.</p> <table border="1" data-bbox="1114 1136 1442 1325"> <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> </table> <p>I know that ... and ... = ... so ... and ... = ...</p> <p><math>30 + 20 = 50</math> <math>34 + 20 = 54</math></p>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
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# Addition

Progression of skills	Key representations		
<p><b>Add 2-digit numbers</b> (not across a ten)</p> <p>Lining up ones and tens in columns will support with later written methods.</p>	<p>... ones + ... ones = ... ones ... tens + ... tens = ... tens</p> <p>3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64</p>   		
<p><b>Add 2-digit numbers</b> (across a ten)</p> <p>Begin to exchange 10 ones for 1 ten.</p>	<p>There are .... ones, so I do/do not need to make an exchange.</p> <p>... ones = ... ten and ... ones</p>    <p>5 ones + 7 ones = 12 ones 12 ones = 1 ten and 2 ones 4 tens + 3 tens + 1 ten = 8 tens 8 tens and 2 ones = 82</p>		
<p><b>Missing numbers</b></p> <p>Solve missing number problems and use the inverse to check.</p>	<p>How many more do you need to make ...?</p>  <p><math>6 + \square = 10</math> <math>10 - \square = 6</math></p>	<p>If ... is a whole and ... is a part, then ... is the other part.</p> <p><math>\square + 3 = 7</math> <math>7 - 3 = \square</math></p> 	<p>... can be partitioned into ... and ...</p> <p><math>10 + 8 = 12 + \square</math></p>  

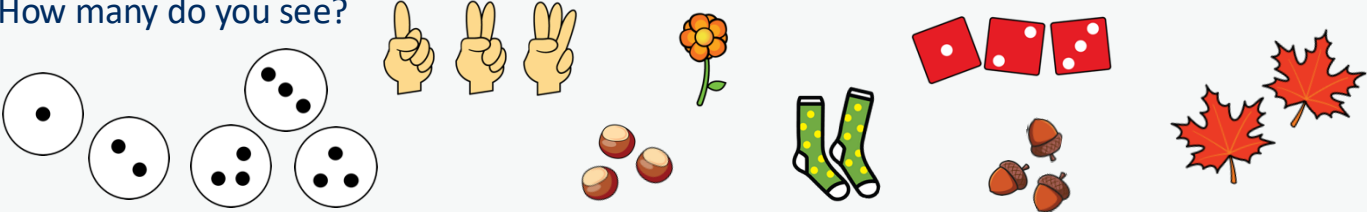


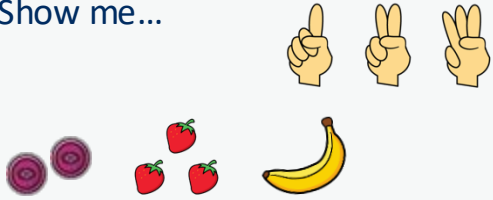
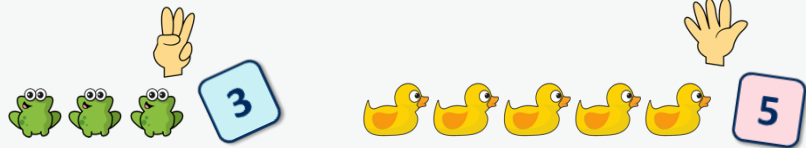

# Progression of skills - Subtraction

Year group	Skill
Nursery	<ul style="list-style-type: none"><li>• Subitise to 3</li><li>• Count how many</li><li>• Make numbers to 5</li><li>• Take 1 away (through songs and rhymes)</li></ul>
Reception	<ul style="list-style-type: none"><li>• Conceptually subitise to 5</li><li>• 1 less</li><li>• Notice the composition of numbers within 10</li><li>• Partition</li><li>• Take away</li></ul>
Year 1	<ul style="list-style-type: none"><li>• Find a part</li><li>• Take away</li><li>• Bonds within 10</li><li>• Related facts within 20</li><li>• Missing numbers</li></ul>

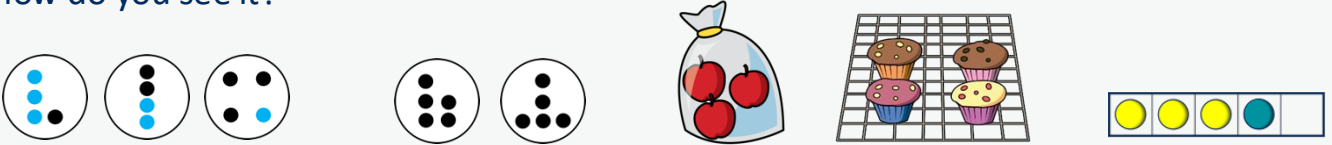
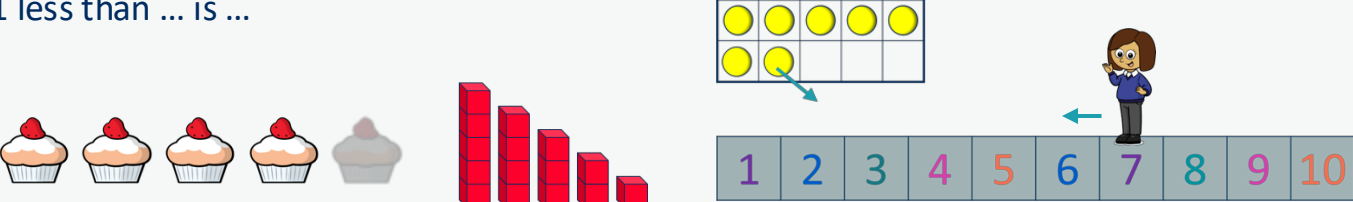
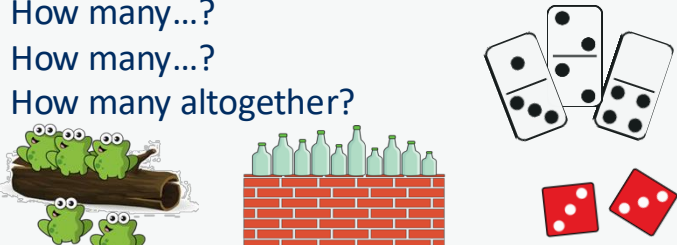
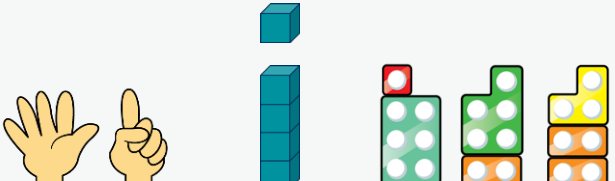
# Progression of skills - Subtraction

Year group	Skill
Year 2	<ul style="list-style-type: none"><li>• Subtract 1s from any number (related facts)</li><li>• Subtract across a 10</li><li>• Subtract multiples of 10</li><li>• Subtract 10s from any number</li><li>• Subtract two 2-digit numbers (not across a ten)</li><li>• Subtract two 2-digit numbers (across a ten)</li><li>• Missing numbers</li></ul>
Year 3	<ul style="list-style-type: none"><li>• Subtract 1s, 10s and 100s from a 3-digit number</li><li>• Subtract two numbers (no exchange)</li><li>• Subtract two numbers across a 10 or 100</li><li>• Complements to 100</li><li>• Subtract fractions with the same denominator within 1 whole</li></ul>

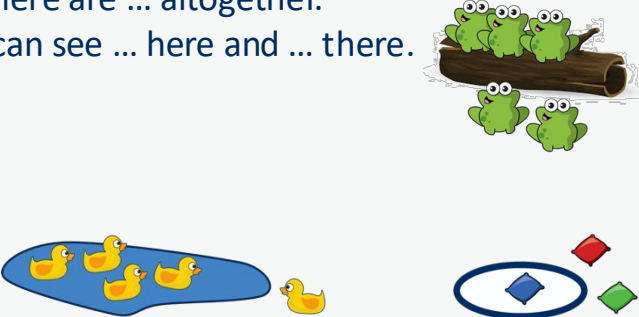
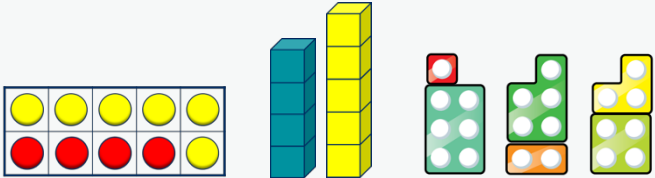
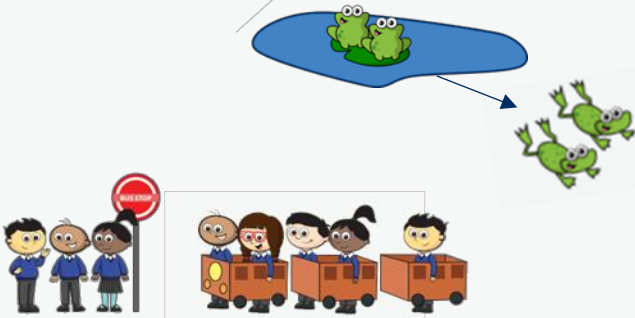
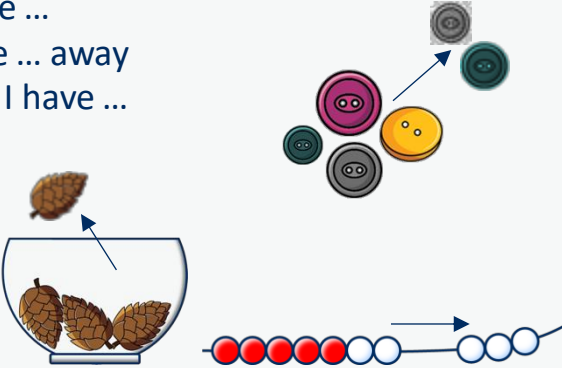
# Subtraction

<p><b>Nursery</b></p>	<ul style="list-style-type: none"> <li>• Begin to have an understanding of numbers to 5</li> <li>• We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.</li> </ul>	
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>	
<p><b>Subitise to 3</b></p> <p>Instantly see how many.</p>	<p>How many do you see?</p> 	
<p><b>Count how many</b></p> <p>Begin to count objects using 1-1 correspondence.</p>	<p>How many are there?</p> <p>1 2 3 4 5</p> 	<p>Count out ... from a larger group.</p> <p>E.g. Collect a cup for everyone at the table.</p> 
<p><b>Make numbers to 5</b></p> <p>Start by showing 1, 2 and 3 using fingers.</p>	<p>Show me...</p> 	<p>Begin to link numerals to quantities.</p> 
<p><b>Take 1 away</b></p> <p>Through stories, songs and rhymes.</p>	<p>How many do we have now?</p> 	

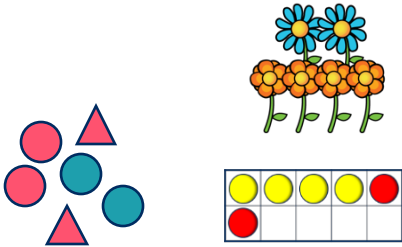
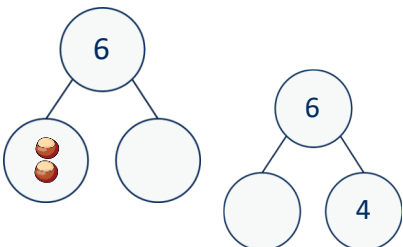
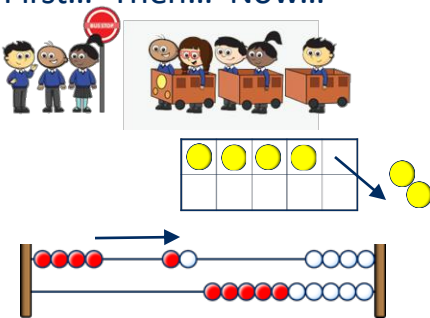
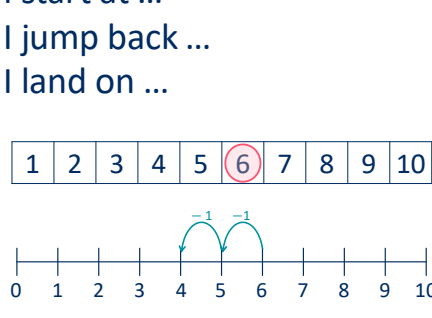
# Subtraction

<p><b>Reception</b></p>	<ul style="list-style-type: none"> <li>Have a deep understanding of number to 10, including the composition of each number.</li> <li>Subitise (recognise quantities without counting) up to 5</li> <li>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (and some subtraction facts) and some number bonds to 10, including double facts.</li> </ul>	
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>	
<p><b>Conceptually subitise to 5</b></p> <p>Notice the parts that make up the whole.</p>	<p>What do you see? How do you see it?</p> 	
<p><b>1 less</b></p> <p>Continue to link to stories, songs and rhymes.</p>	<p>1 less than ... is ...</p> 	
<p><b>Notice the composition of numbers within 10</b></p> <p>Link to stories, songs and rhymes.</p>	<p>How many...? How many...? How many altogether?</p> 	<p>How many ways can you make...?</p> 

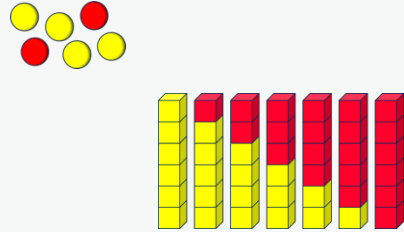
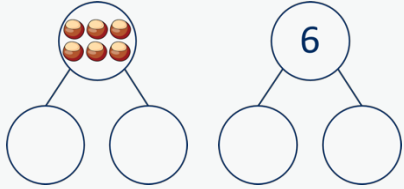
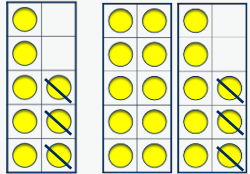
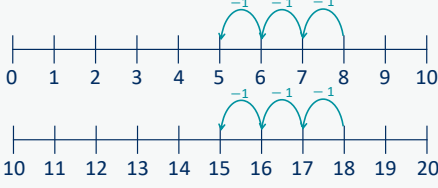
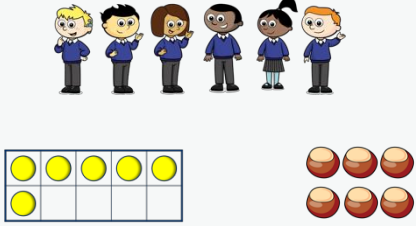
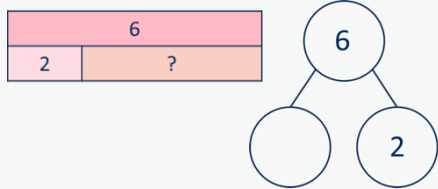

# Subtraction

Progression of skills	Key representations	
<p><b>Partition</b></p> <p>Using objects, explore different ways to partition a number into 2 or more parts.</p>	<p>There are ... altogether. I can see ... here and ... there.</p> 	<p>... and ... make ...</p> 
<p><b>Take away</b></p> <p>A quantity is reduced.</p>	<p>First... Then... Now...</p> 	<p>I have ... I take ... away Now I have ...</p> 

# Subtraction

<p><b>Year 1</b></p>	<ul style="list-style-type: none"> <li>• Read, write and interpret mathematical statements involving subtraction (−) and equals (=) signs.</li> <li>• Represent and use number bonds and related subtraction facts within 20</li> <li>• Subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></li> </ul>		
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>		
<p><b>Find a part</b></p> <p>Link to number bonds and known facts. E.g. <math>2 + 4 = 6</math> so if 6 is the whole and 4 is a part, the other part must be 2</p>	<p>There are ... in total. ... are ... How many are <b>not</b> ...?</p> 	<p>... is the whole. ... is a part. ... is a part.</p> 	<p>... subtract ... is equal to ... ... is equal to ... − ...</p> $6 - 2 = 4$ $6 - 4 = 2$ $4 = 6 - 2$ $2 = 6 - 4$
<p><b>Take away</b></p> <p>A quantity is decreased.</p>	<p>First... Then... Now...</p> 	<p>I start at ... I jump back ... I land on ...</p> 	<p>... minus ... is equal to ... ... is equal to ... − ...</p> $6 - 2 = 4$ $6 - 4 = 2$ $4 = 6 - 2$ $2 = 6 - 4$

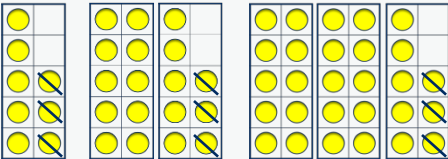
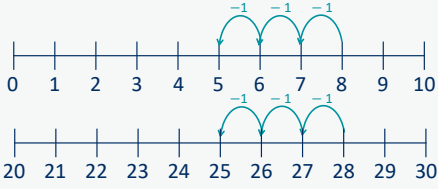
# Subtraction

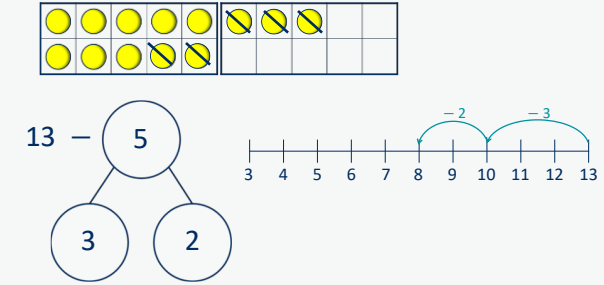
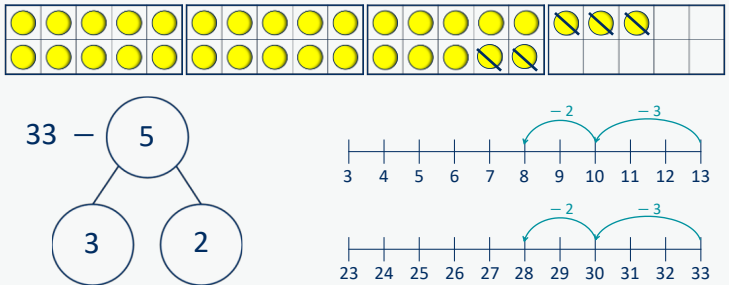
Progression of skills	Key representations		
<p><b>Bonds within 10</b></p> <p>Focus on subtraction facts.</p> <p>Encourage children to notice patterns.</p>	<p>... is made of ... and ... ... and ... make ...</p> 	<p>... can be partitioned into ... and ...</p> 	<p>... minus ... is equal to ...</p> $6 - 0 = 6$ $6 - 1 = 5$ $6 - 2 = 4$ $6 - 3 = 3$ $6 - 4 = 2$ $6 - 5 = 1$ $6 - 6 = 0$
<p><b>Related facts within 20</b></p> <p>Make links to known facts.</p>	<p>I know that ... minus ... = ... so ... minus ... = ...</p> 	<p>... less than ... is ... so ... less than ... is ...</p> 	<p>What patterns do you notice?</p> $8 - 3 = 5$ $18 - 3 = 15$ $5 = 8 - 3$ $15 = 18 - 3$
<p><b>Missing numbers</b></p> <p>Make links to known facts.</p>	<p>How many do you need to subtract to make ...?</p> 	<p>If ... is the whole and ... is a part, the other part must be...</p> 	<p>... minus ... is equal to ...</p> $6 - \square = 2$ $2 = 6 - \square$ 

# Subtraction

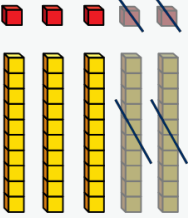
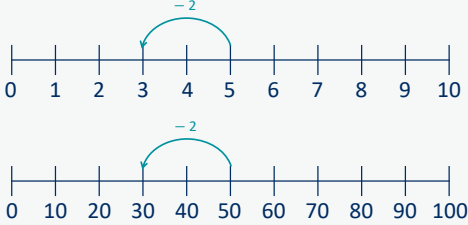
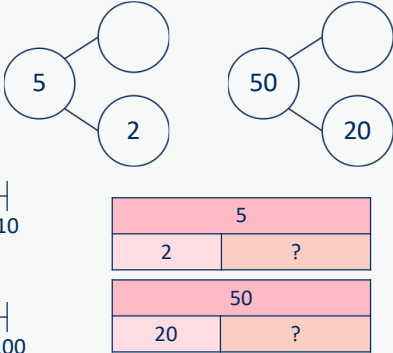
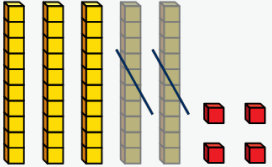
	<ul style="list-style-type: none"> <li>Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100</li> <li>Subtract numbers using concrete objects, pictorial representations, and mentally, including:             <ul style="list-style-type: none"> <li>a two-digit number and 1s</li> <li>a two-digit number and 10s</li> <li>2 two-digit numbers</li> </ul> </li> <li>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>
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<b>Progression of skills</b>	<b>Key representations</b>
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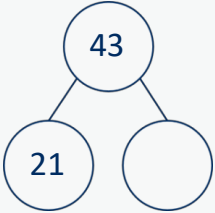
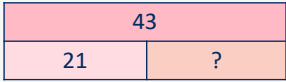
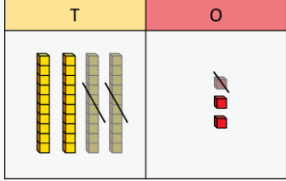
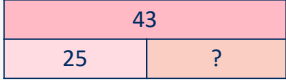
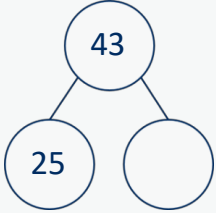
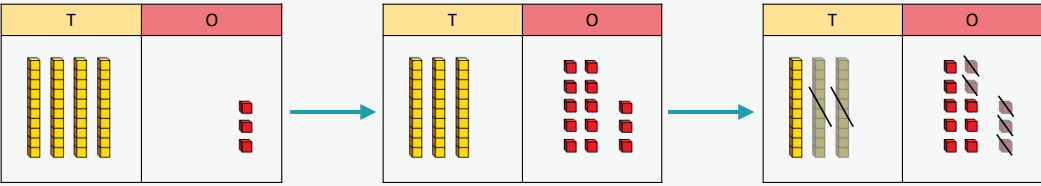
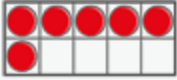
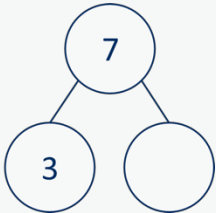
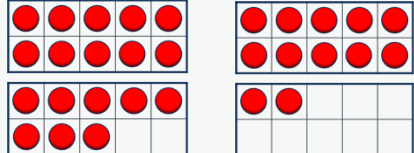
<p><b>Subtract ones from any number</b> (related facts)</p> <p>Make links to known facts.</p>	<p>I know that ... minus ... = ... so ... minus ... = ...</p> 	<p>... less than ... is ... so ... less than ... is ...</p> 	<p>What do you notice? Can you continue the pattern?</p> $8 - 3 = 5$ $18 - 3 = 15$ $28 - 3 = 25...$
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<p><b>Subtract across a 10</b></p> <p>Partition the number being subtracted to bridge through a ten.</p>	<p>... can be partitioned into ... and ...</p> 	<p>Make links with related facts.</p> 
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# Subtraction

Progression of skills	Key representations																																																														
<p><b>Subtract multiples of 10</b></p> <p>Make links to known facts within ten.</p>	<p>... ones – ... ones = ... ones so ... tens – ... tens = ... tens</p>  <p><math>5 - 2 = 3</math> <math>50 - 20 = 30</math></p>	<p>What is the same? What is different?</p> 	 <table border="1" data-bbox="1632 491 1891 646"> <tr><td colspan="2">5</td></tr> <tr><td>2</td><td>?</td></tr> </table> <table border="1" data-bbox="1632 572 1891 646"> <tr><td colspan="2">50</td></tr> <tr><td>20</td><td>?</td></tr> </table>	5		2	?	50		20	?																																																				
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<p><b>Subtract 10s from any number</b></p> <p>Make links to known facts.</p>	<p>... tens – ... tens = ... tens ... tens and ... ones = ...</p> 	<p>To subtract ... I need to subtract 10 ... times.</p> <table border="1" data-bbox="1079 839 1477 1068"> <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> </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	<p>I know that ... minus ... = ... so ... minus ... = ...</p> <p><math>50 - 20 = 30</math> <math>54 - 20 = 34</math></p>
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# Subtraction

Progression of skills	Key representations		
<p><b>Subtract two 2-digit numbers</b> (not across a ten)</p>	<p>... ones – ... ones = ... ones ... tens – ... tens = ... tens</p>  	 <p>3 ones – 1 one = 2 ones 4 tens – 2 tens = 2 tens 2 tens and 2 ones = 22</p>	
<p><b>Subtract two 2-digit numbers</b> (across a ten)</p> <p>Begin to exchange 1 ten for 10 ones.</p>	<p>I need to make an exchange because I do not have enough ones to subtract ... ones.</p>  	 <p>3 ones – 5 ones (I need to exchange 1 ten for 10 ones)</p> <p>13 ones – 5 ones = 8 ones 3 tens – 2 tens = 1 ten 1 ten and 8 ones = 18</p>	
<p><b>Missing numbers</b></p> <p>Solve missing number problems and use the inverse to check.</p>	<p>How many do you need to subtract to make ...?</p>  <p><math>10 - \square = 6</math> <math>6 + \square = 10</math></p>	<p>If ... is a whole and ... is a part, then ... is the other part.</p> <p><math>7 - 3 = \square</math> <math>\square + 3 = 7</math></p> 	<p>... can be partitioned into ... and ...</p> <p><math>18 - \square = 12 + 2</math></p> 


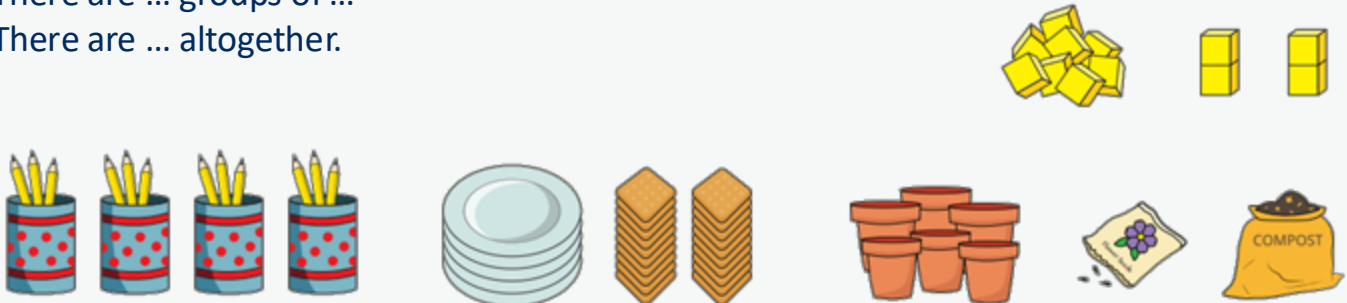
# Progression of skills - Multiplication

Year group	Skill
Nursery	<ul style="list-style-type: none"><li>Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)</li></ul>
Reception	<ul style="list-style-type: none"><li>Double to 10</li><li>Make equal groups</li></ul>
Year 1	<ul style="list-style-type: none"><li>Count in 2s, 5s and 10s</li><li>Add equal groups</li><li>Make arrays</li><li>Make doubles</li></ul>

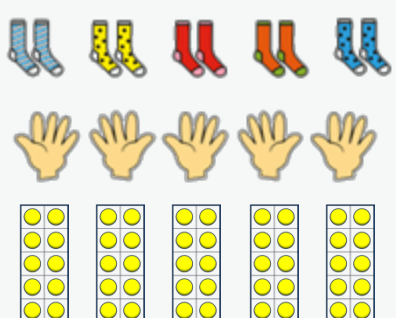


# Progression of skills - Multiplication

Year group	Skill
Year 2	<ul style="list-style-type: none"><li>• Link repeated addition and multiplication</li><li>• Use arrays</li><li>• Double</li><li>• The 2 times-table</li><li>• The 10 times-table</li><li>• The 5 times-table</li><li>• Missing numbers</li></ul>
Year 3	<ul style="list-style-type: none"><li>• The 3 times-table</li><li>• The 4 times-table</li><li>• The 8 times-table</li><li>• Related facts</li><li>• Multiply a 2-digit number by a 1-digit number - no exchange</li><li>• Multiply a 2-digit number by a 1-digit number - with exchange</li><li>• Scaling</li><li>• Correspondence problems</li></ul>


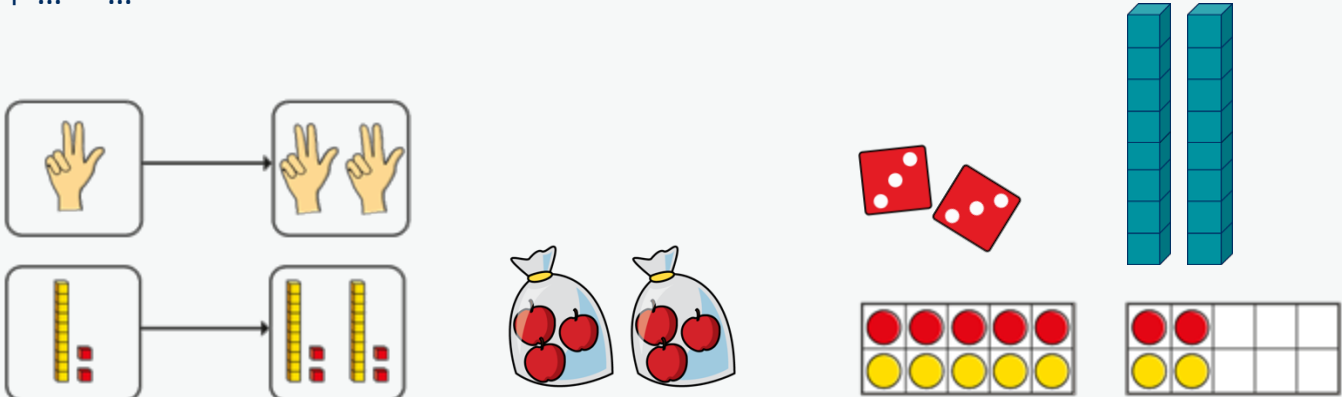
# Multiplication

<p><b>Reception</b></p>	<ul style="list-style-type: none"> <li>• Have a deep understanding of number to 10, including the composition of each number.</li> <li>• Subitise (recognise quantities without counting) up to 5</li> <li>• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.</li> <li>• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</li> </ul>
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>
<p><b>Double to 10</b></p> <p>Prompt children to notice that double means twice as many and to notice that there are two equal groups.</p>	<p>Double ... is ... ... is double ...</p> 
<p><b>Make equal groups</b></p> <p>Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.</p>	<p>There are ... groups of ... There are ... altogether.</p> 










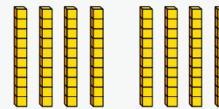
# Multiplication

<p><b>Year 1</b></p>	<ul style="list-style-type: none"> <li>Count in multiples of twos, fives and tens.</li> <li>Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher.</li> </ul>																																																												
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>																																																												
<p><b>Count in 2s, 5s and 10s</b></p> <p>Begin by counting objects that naturally come in 2s, 5s and 10s, for example pairs of socks or fingers.</p>	<p>There are ... equal groups of ... There are ... altogether.</p> 	<p>Continue to colour in ...s What do you notice?</p> <table border="1" data-bbox="1098 671 1471 856"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	<p>Complete the number track/number line by counting in ...s.</p> <table border="1" data-bbox="1512 685 1947 742"> <tr> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> 	5	10	15	20				
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<p><b>Add equal groups (repeated addition)</b></p> <p>Children should be able to write a repeated addition to represent equal groups and to draw pictures or use objects to represent a repeated addition.</p>	<p>There are ... groups of ... There are ... altogether.</p>  <p><math>10 + 10 + 10 = 30</math></p> <p><math>5 + 5 + 5 + 5 = 20</math></p>		<p>What is the same? What is different?</p> <p><math>2 + 2 + 2 =</math></p> <p><math>5 + 5 + 5 =</math></p> <p><math>10 + 10 + 10 =</math></p> <p>Use objects or a drawing to represent the equal groups and find how many in total.</p>																																																										

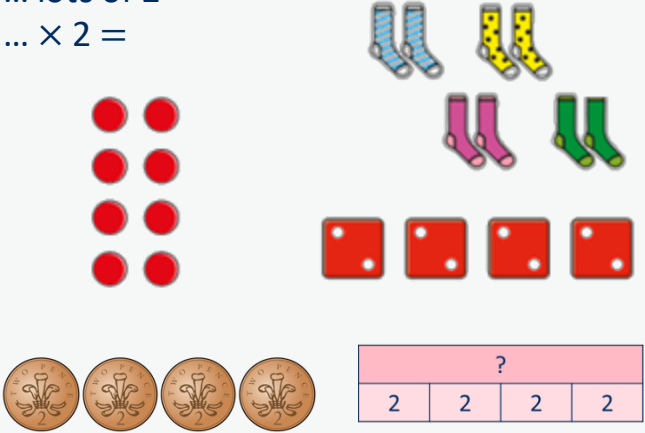

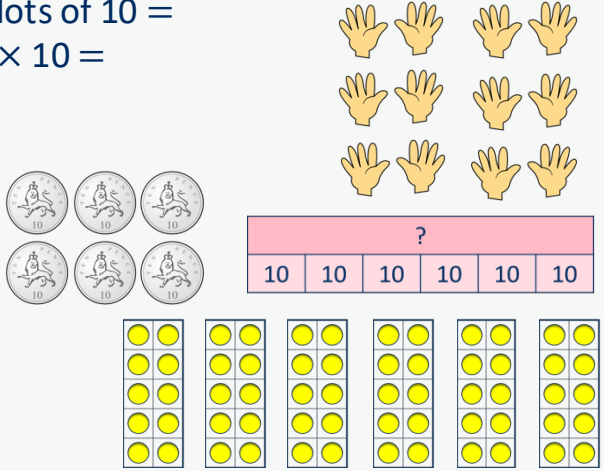

# Multiplication

Progression of skills	Key representations
<p><b>Make arrays</b></p> <p>Children use their knowledge of adding equal groups to arrange objects in columns and rows.</p>	<p>There are ... rows of ... There are ... altogether. There are ... columns of ... There are ... altogether.</p> 
<p><b>Make doubles</b></p> <p>Children understand that doubles are two equal groups. Children may begin to explore doubles beyond 20 using base 10</p>	<p>Double ... is ... ... + ... = ...</p> 




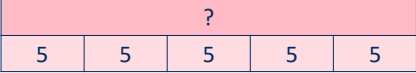


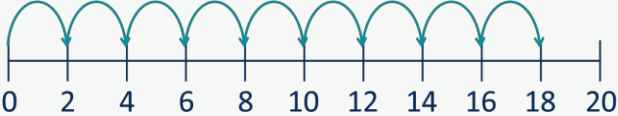
# Multiplication

<p><b>Year 2</b></p>	<ul style="list-style-type: none"> <li>Recall and use multiplication facts for the 2, 5 and 10 multiplication tables.</li> <li>Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (<math>\times</math>) and equals (<math>=</math>) signs.</li> <li>Show that multiplication of two numbers can be done in any order (commutative).</li> </ul>													
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>													
<p><b>Link repeated addition and multiplication</b></p> <p>Encourage children to make the link between repeated addition and multiplication.</p>	<p>There are ... equal groups with ... in each group. There are ... altogether.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> </table> </div> <div style="text-align: left;"> <p><math>3 + 3 = 6</math> <math>2 \times 3 = 6</math></p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr><td colspan="4" style="text-align: center;">20</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> </table> </div> <div style="text-align: left;"> <p><math>5 + 5 + 5 + 5 = 20</math> <math>4 \times 5 = 20</math></p> </div> </div>		6		3	3	20				5	5	5	5
6														
3	3													
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<p><b>Use arrays</b></p> <p>Encourage children to see that multiplication is commutative.</p>	<p>There are ... rows with ... in each row. There are ... columns with ... in each column.</p> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>3 lots of 5 = 15 <math>5 + 5 + 5 = 15</math></p> </div> <div style="text-align: center;">  <p>5 lots of 3 = 15 <math>3 + 3 + 3 + 3 + 3 = 15</math></p> </div> </div>	<p>I can see ... <math>\times</math> ... and ... <math>\times</math> ...</p> <p style="text-align: center;"><math>3 \times 5 = 15</math> <math>5 \times 3 = 15</math> <math>3 \times 5 = 5 \times 3</math></p>												
<p><b>Double</b></p> <p>Encourage children to make links with related facts.</p>	<p>Double ... is ...</p> <div style="display: flex; align-items: center;">  <span style="margin: 0 10px;">→</span>  </div> <p style="margin-left: 100px;">Double 4 = 4 + 4 Double 4 is 8</p>	<p>Double ... is ... so double ... is ...</p> <div style="display: flex; align-items: center;">  <span style="margin: 0 10px;">→</span>  </div> <p style="margin-left: 100px;">Double 4 is 8</p> <div style="display: flex; align-items: center;">  <span style="margin: 0 10px;">→</span>  </div> <p style="margin-left: 100px;">Double 40 is 80</p>												

# Multiplication

Progression of skills	Key representations																																									
<p><b>The 2 times-table</b></p> <p>Encourage daily counting in multiples both forwards and back. Notice that all multiples of 2 are even numbers.</p>	<p>... lots of 2 = ... <math>\times 2 =</math></p> 	<p>... times 2 is equal to ...</p> <table border="1" data-bbox="1384 344 1798 462"> <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> <p> <math>1 \times 2 = 2</math>    <math>2 = 1 \times 2</math>  <math>2 \times 2 = 4</math>    <math>4 = 2 \times 2</math>  <math>3 \times 2 = 6</math>    <math>6 = 3 \times 2</math> </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										
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<p><b>The 10 times-table</b></p> <p>Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.</p>	<p>... lots of 10 = ... <math>\times 10 =</math></p> 	<p>... times 10 is equal to ...</p> <table border="1" data-bbox="1384 825 1798 982"> <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> </table> <p> <math>1 \times 10 = 10</math>    <math>10 = 1 \times 10</math>  <math>2 \times 10 = 20</math>    <math>20 = 2 \times 10</math>  <math>3 \times 10 = 30</math>    <math>30 = 3 \times 10</math> </p> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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# Multiplication

Progression of skills	Key representations																																									
<p><b>The 5 times-table</b></p> <p>Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.</p>	<p>... lots of 5 =</p> <p>... <math>\times 5 =</math></p>    	<p>... times 5 is equal to ...</p> <table border="1" data-bbox="1384 339 1810 501"> <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> </table> <p> <math>1 \times 5 = 5</math>      <math>5 = 1 \times 5</math>  <math>2 \times 5 = 10</math>    <math>10 = 2 \times 5</math>  <math>3 \times 5 = 15</math>    <math>15 = 3 \times 5</math> </p> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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<p><b>Missing numbers</b></p> <p>Make links to known facts.</p>	<p>... is equal to ... groups of ...</p> <p>18 socks, how many pairs? </p> 	<p>... times ... is equal to ...</p> <p><math>\square \times 2 = 18</math></p> <p><math>18 = 2 \times \square</math></p>																																								


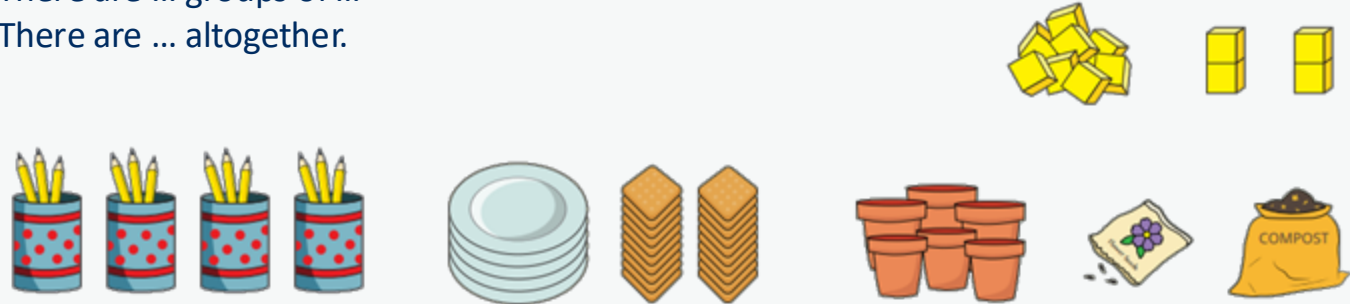
# Progression of skills - Division

Year group	Skill
Nursery	<ul style="list-style-type: none"><li>• Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)</li></ul>
Reception	<ul style="list-style-type: none"><li>• Sharing</li><li>• Grouping</li></ul>
Year 1	<ul style="list-style-type: none"><li>• Make equal groups – grouping</li><li>• Make equal groups – sharing</li><li>• Find a half</li><li>• Find a quarter</li></ul>




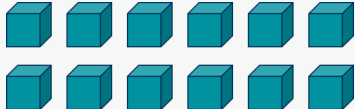




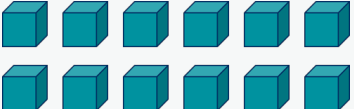
# Progression of skills - Division

Year group	Skill
Year 2	<ul style="list-style-type: none"><li>• Divide by 2</li><li>• Divide by 10</li><li>• Divide by 5</li><li>• Missing numbers</li><li>• Unit fractions</li><li>• Non-unit fractions</li></ul>
Year 3	<ul style="list-style-type: none"><li>• Divide by 3</li><li>• Divide by 4</li><li>• Divide by 8</li><li>• Related facts</li><li>• Divide a 2-digit number by a 1-digit number - no exchange</li><li>• Divide a 2-digit number by a 1-digit number - with remainders</li><li>• Unit fractions of a set of objects</li><li>• Non-unit fractions of a set of objects</li></ul>

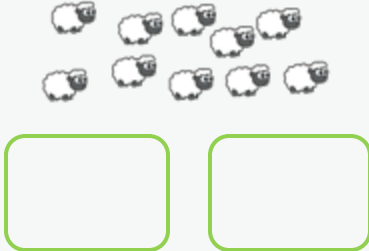
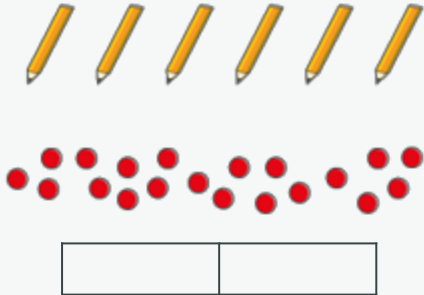
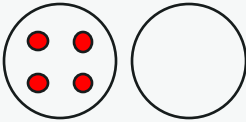

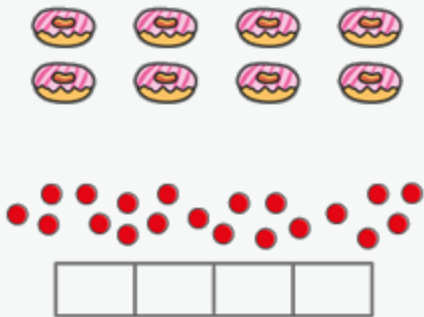
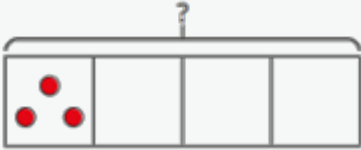
# Division

<p><b>Reception</b></p>	<ul style="list-style-type: none"> <li>• Have a deep understanding of number to 10, including the composition of each number.</li> <li>• Subitise (recognise quantities without counting) up to 5</li> <li>• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.</li> <li>• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</li> </ul>
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>
<p><b>Sharing</b></p> <p>Provide practical activities such as sharing items during snack time. Encourage children to check whether items have been shared fairly (equally).</p>	<p>There are ... altogether. They are shared equally between ... groups.</p> 
<p><b>Grouping</b></p> <p>Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.</p>	<p>There are ... groups of ... There are ... altogether.</p> 

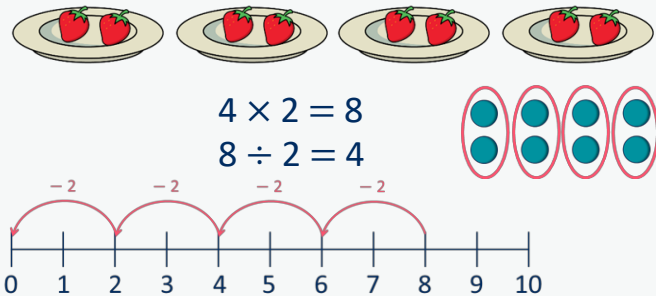
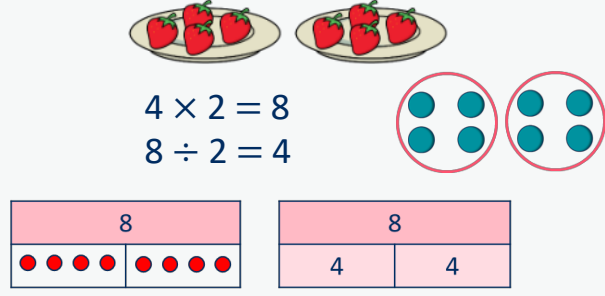
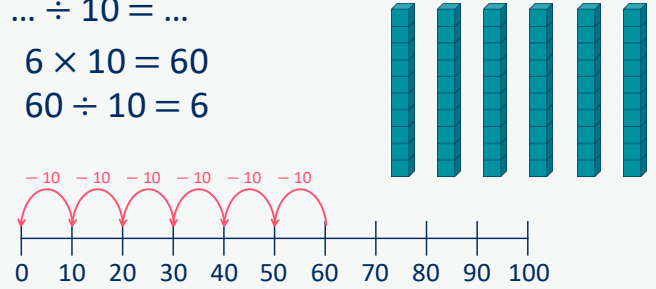
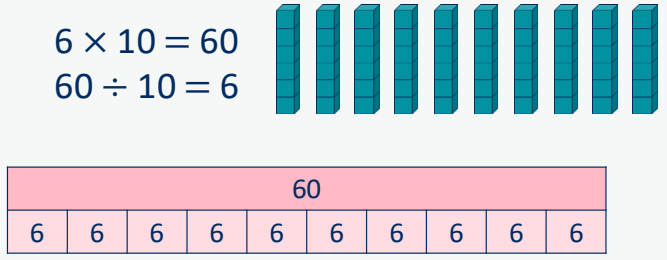
# Division

<p><b>Year 1</b></p>	<ul style="list-style-type: none"> <li>Solve simple one-step problems involving division, using concrete objects, pictorial representations and arrays with the support of the teacher.</li> <li>Recognise, find and name a half as one of two equal parts of a quantity.</li> <li>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>		
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>		
<p><b>Make equal groups - grouping</b></p> <p>Encourage children to physically move objects into equal groups. They can also circle equal groups when using pictures.</p>	<p>There are ... altogether. How many groups of ... can you make?</p>  	<p>Circle groups of 2 There are ... groups of 2</p> 	<p>Take ... cubes. Make equal groups.</p>  <p>There are ... groups of ...</p>
<p><b>Make equal groups – sharing</b></p> <p>Encourage children to check that the objects have been shared fairly and each group is the same.</p>	<p>... have been shared equally between... There are ... on/in each ...</p>    		<p>Take ... cubes. Share them between ...</p>  <p>12 shared between ... is ...</p>


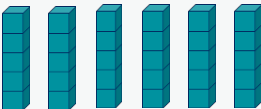
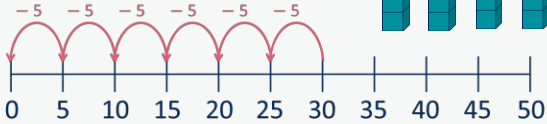

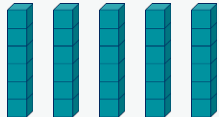
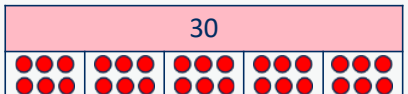
# Division

Progression of skills	Key representations		
<p><b>Find a half</b></p> <p>Start with practical opportunities to share a quantity into 2 groups. Progress to circling half of the objects in a picture and then to finding the whole from a given half.</p>	<p>To find half, I need to share into 2 equal groups.</p>  <p>There are ... in each group.</p>	<p>Half of ... is ...</p> 	<p>If ... is half, what is the whole?</p>  <p>4 is half of ...</p>
<p><b>Find a quarter</b></p> <p>Start with practical opportunities to share a quantity into 4 groups. Progress to using pictures or bar models to find a quarter and then to finding the whole from a given quarter.</p>	<p>To find a quarter, I need to share into 4 equal groups.</p>  <p>There are ... in each group.</p>	<p>A quarter of ... is ...</p> 	<p>If ... is one quarter, what is the whole?</p>  <p>3 is one quarter of ...</p>

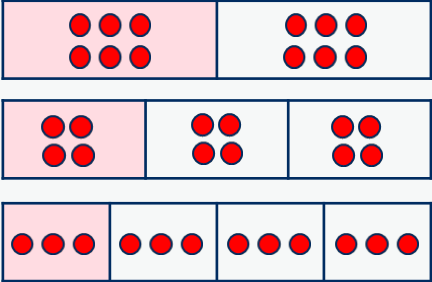

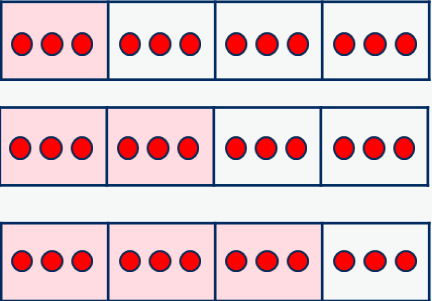
# Division

<p><b>Year 2</b></p>	<ul style="list-style-type: none"> <li>Recall and use division facts for the 2, 5 and 10 multiplication tables.</li> <li>Calculate mathematical statements for division within the multiplication tables and write them using the division (<math>\div</math>) and equals (=) signs.</li> <li>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a quantity.</li> </ul>	
<p><b>Progression of skills</b></p>	<p><b>Key representations</b></p>	
<p><b>Divide by 2</b></p> <p>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts and halving.</p>	<p>There are ... equal groups of 2 ... <math>\div 2 = \dots</math></p>  <p><math>4 \times 2 = 8</math> <math>8 \div 2 = 4</math></p>	<p>... shared equally between 2 is ... Half of ... is ... ... <math>\div 2 = \dots</math></p>  <p><math>4 \times 2 = 8</math> <math>8 \div 2 = 4</math></p>
<p><b>Divide by 10</b></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 ... equal groups of 10 ... <math>\div 10 = \dots</math></p> <p><math>6 \times 10 = 60</math> <math>60 \div 10 = 6</math></p> 	<p>... shared equally between 10 is ... ... <math>\div 10 = \dots</math></p> <p><math>6 \times 10 = 60</math> <math>60 \div 10 = 6</math></p> 

# Division

Progression of skills	Key representations																					
<p><b>Divide by 5</b></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 ... equal groups of 5</p> <p>... <math>\div 5 = \dots</math></p>  <p><math>6 \times 5 = 30</math> <math>30 \div 5 = 6</math></p>  	<p>... shared equally between 5 is ...</p> <p>... <math>\div 5 = \dots</math></p>  <p><math>6 \times 5 = 30</math> <math>30 \div 5 = 6</math></p>  																				
<p><b>Missing numbers</b></p> <p>Bar models are useful to show the link between multiplication and division.</p>	<p>... divided by 2/5/10 is equal to ...</p> <table border="1" data-bbox="576 822 758 905"> <tr><td>?</td></tr> <tr><td>10</td><td>10</td></tr> </table> $\square \div 2 = 10$ <table border="1" data-bbox="576 925 1011 1008"> <tr><td>?</td></tr> <tr><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr> </table> $\square \div 5 = 10$ <table border="1" data-bbox="576 1028 1350 1110"> <tr><td>?</td></tr> <tr><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr> </table> $\square \div 10 = 10$		?	10	10	?	10	10	10	10	10	?	10	10	10	10	10	10	10	10	10	10
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<p><b>Unit fractions</b></p> <p>In Y2 the focus is on finding <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> and <math>\frac{1}{3}</math></p> <p>Bar models are useful to show the link between division and finding a fraction.</p>	<p>The objects have been shared fairly into ... groups.</p> <p><math>\frac{1}{\square}</math> of ... is ...</p> 	<p>There are ... equal parts.</p> <p>There is ... part circled.</p> <p><math>\frac{1}{\square}</math> is circled.</p> 
<p><b>Non-unit fractions</b></p> <p>In Y2 the focus is on finding <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math></p> <p>Prompt children to notice that <math>\frac{2}{4}</math> is equivalent to <math>\frac{1}{2}</math></p>	<p>The objects have been shared fairly into ... groups.</p> <p><math>\frac{\square}{\square}</math> of ... is ...</p> 	<p>There are ... equal parts.</p> <p>There are ... parts circled.</p> <p><math>\frac{\square}{\square}</math> is circled.</p> 