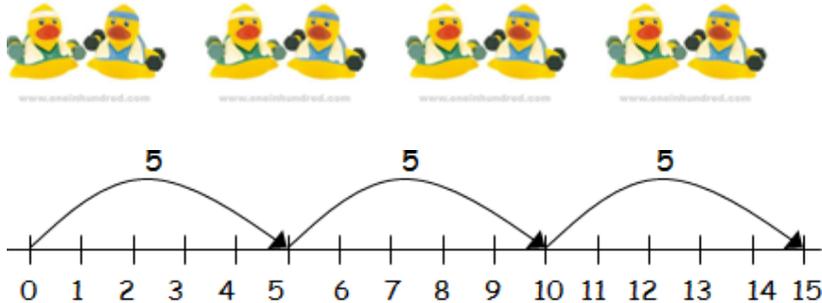
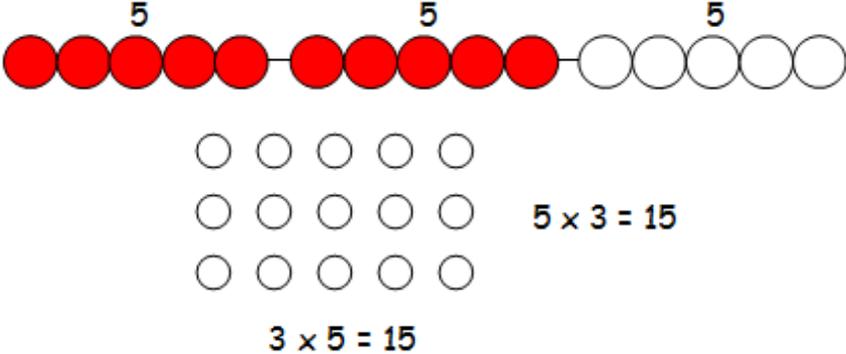


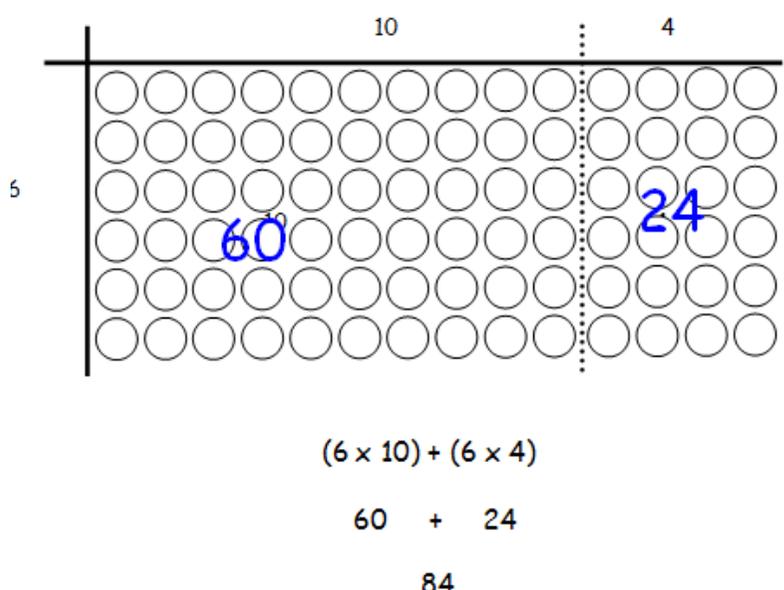
## Progression in Calculations – Multiplication

**Mental Calculations:** *Children's mental recall is the building blocks of all number work. These are developed from foundation stage and continue throughout the school. Moves to written methods do not replace the need to teach and revisit mental strategies.*

<https://www.ncetm.org.uk/resources/40530>

This link takes you to videos explaining a range of strategies in our progression document.

Year Group	Expectations	Models, Images and Links
1	<ul style="list-style-type: none"> <li>Use concrete objects, pictorial representations and arrays to count in 2s, 5s and 10s</li> </ul>	 <p>The image shows four pairs of ducks, each pair representing a group of 5. Below them is a number line from 0 to 15 with tick marks every 1 unit. Three curved arrows represent jumps of 5, starting at 0 and ending at 5, 5 and 10, and 10 and 15. The number 5 is written above each jump.</p>
2	<ul style="list-style-type: none"> <li>Recall and use 2x, 5x and 10x table</li> <li>Calculate using and understanding the signs x and =</li> <li>Understand that multiplication is commutative</li> <li>Understand that multiplication is the inverse of division</li> </ul>	 <p>The image shows a row of 15 circles, with the first 10 circles filled red and the last 5 circles empty. Above the first 5 red circles is a '5', above the next 5 red circles is a '5', and above the last 5 empty circles is a '5'. Below the circles is a 3x5 array of empty circles. To the right of the array are the equations <math>5 \times 3 = 15</math> and <math>3 \times 5 = 15</math>.</p> <p style="text-align: center;"><a href="https://www.youtube.com/watch?v=VhpUt0vXI4w">https://www.youtube.com/watch?v=VhpUt0vXI4w</a></p>

3	<ul style="list-style-type: none"> <li>• Recall and use 3x, 4x and 8x tables</li> <li>• Continue to use 2x, 5x and 10x tables</li> <li>• Calculate mentally using the tables they know</li> <li>• Begin to multiply 1 digit by 2 digit numbers using apparatus</li> <li>• Move towards using the grid method</li> </ul>	<a href="https://www.youtube.com/watch?v=dzVyBQ5uTbo">https://www.youtube.com/watch?v=dzVyBQ5uTbo</a>
4	<ul style="list-style-type: none"> <li>• Continue to use 2x, 3x, 4x, 5x, 8x, and 10x table</li> <li>• Recall and use 6x, 7x and 9x table</li> <li>• Use known facts to multiply mentally including by 0 and 1</li> <li>• Multiply three numbers together e.g. <math>6 \times 4 \times 3 =</math></li> <li>• Recognise and use factor pairs</li> <li>• Use the grid method to multiply 2 and 3 digit numbers by a 1 digit number</li> </ul>	 <p style="text-align: center;"> <math>(6 \times 10) + (6 \times 4)</math>  <math>60 + 24</math>  <math>84</math> </p>

5	<ul style="list-style-type: none"> <li>Recall and use all tables to 12x12</li> <li>Identify multiples, factors and common factors</li> <li>Understand prime numbers; establish whether a number up to 100 is prime and recall all prime numbers to 19</li> <li>Multiply 4 digit numbers by 1 or 2 digit numbers moving from grid method to long multiplication</li> <li>Multiply whole numbers and those involving decimals by 10, 100 and 1000</li> </ul>	<p>124 × 26 becomes</p> $  \begin{array}{r}  \phantom{0}1 \phantom{0}2 \phantom{0}4 \\  \times \phantom{0}2 \phantom{0}6 \\  \hline  \phantom{0}7 \phantom{0}4 \phantom{0}4 \\  \phantom{0}2 \phantom{0}4 \phantom{0}8 \phantom{0}0 \\  \hline  \phantom{0}3 \phantom{0}2 \phantom{0}2 \phantom{0}4 \\  \hline  \phantom{0}1 \phantom{0}1  \end{array}  $ <p>Answer: 3224</p>
6	<ul style="list-style-type: none"> <li>Multiply a 4 digit by a 2 digit number using long multiplication</li> <li>Identify common factors, common multiples and prime numbers</li> <li>Understand and use BIDMAS</li> </ul>	

### Vocabulary for Multiplication

Lots of  
 Groups of  
 Times  
 Multiply  
 Multiplied by  
 Once, twice, three time.....  
 Times table  
 Double  
 Inverse  
 Product  
 Prime  
 Factor  
 multiple