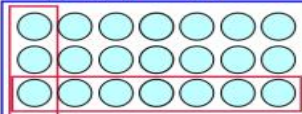

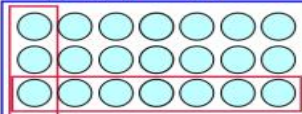

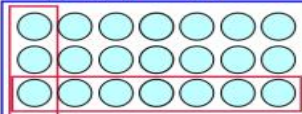



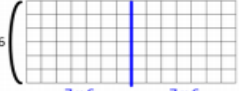
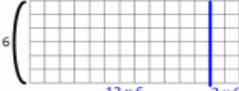

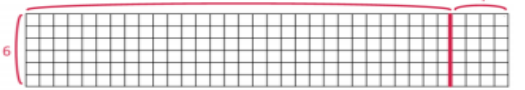


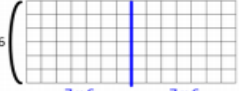
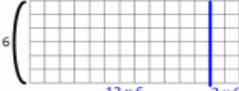

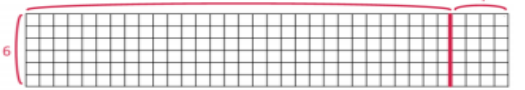


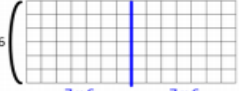
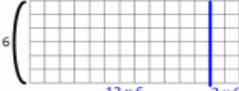

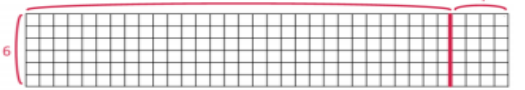


# Year 4 Multiplication

Strategy and Guidance	CPA																				
<p><b><u>Multiplying by 10 and 100</u></b></p> <p>When you multiply by ten, each part is ten times greater. The ones become tens, the tens become hundreds, etc. When multiplying whole numbers, a zero holds a place so that each digit has a value that is ten times greater. Repeated multiplication by ten will build an understanding of multiplying by 100 and 1000</p>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="font-size: small;">thousands</th> <th style="font-size: small;">hundreds</th> <th style="font-size: small;">tens</th> <th style="font-size: small;">ones</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>3</td> <td>0</td> <td><math>3 \times 10 = 30</math></td> </tr> <tr> <td>3</td> <td>0</td> <td>0</td> <td>0</td> <td><math>3 \times 100 = 300</math></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td><math>3 \times 1000 = 3000</math></td> </tr> </tbody> </table>	thousands	hundreds	tens	ones				3	0	$3 \times 10 = 30$	3	0	0	0	$3 \times 100 = 300$					$3 \times 1000 = 3000$
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				$3 \times 1000 = 3000$																	
<p><b><u>Using known facts and place value for mental multiplication involving multiples of 10 and 100</u></b></p> <p>Pupils use their growing knowledge of multiplication facts, place value and derived facts to multiply mentally. Emphasis is placed on understanding the relationship (10 times or 100 times greater) between a known number fact and one to be derived, allowing far larger 'fact families' to be derived from a single known number fact. Knowledge of commutativity (that multiplication can be completed in any order) is used to find a range of related facts.</p>	<table style="width: 100%; text-align: center;"> <tr> <td colspan="2"> <math>3 \times 7 = 21</math>   </td> </tr> <tr> <td colspan="2"> <math>7 \times 3 = 21</math>   </td> </tr> <tr> <td> <math>30 \times 7 = 210</math>  <math>70 \times 3 = 210</math>  <math>7 \times 30 = 210</math>  <math>3 \times 70 = 210</math> </td> <td> <math>300 \times 7 = 2100</math>  <math>700 \times 3 = 2100</math>  <math>7 \times 300 = 2100</math>  <math>3 \times 700 = 2100</math> </td> </tr> </table>	$3 \times 7 = 21$ 		$7 \times 3 = 21$ 		$30 \times 7 = 210$ $70 \times 3 = 210$ $7 \times 30 = 210$ $3 \times 70 = 210$	$300 \times 7 = 2100$ $700 \times 3 = 2100$ $7 \times 300 = 2100$ $3 \times 700 = 2100$														
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<p><b><u>Multiplying by partitioning one number and multiplying each part</u></b></p> <p>Pupils build on mental multiplication strategies and develop an explicit understanding of distributive law, which allows them to explore new strategies to make more efficient calculations. As well as partitioning into tens and ones (a familiar strategy), they begin to explore compensating strategies and factorisation to find the most efficient solution to a calculation. Distributive law <math>a \times (b + c) = a \times b + a \times c</math></p>	<table style="width: 100%;"> <tr> <td style="text-align: center;"><math>14 \times 6</math></td> <td>  </td> <td>  </td> </tr> <tr> <td></td> <td>  </td> <td>  </td> </tr> <tr> <td style="text-align: center;"><math>34 \times 6</math></td> <td colspan="2">  </td> </tr> <tr> <td style="text-align: center;"><math>30 \times 6 + 4 \times 6</math></td> <td colspan="2">  </td> </tr> </table>	$14 \times 6$						$34 \times 6$			$30 \times 6 + 4 \times 6$										
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## Year 4 Multiplication

### Mental multiplication of three 1- digit numbers, using the associative law

Pupils first learn that multiplication can be performed in any order, before applying this to choose the most efficient order to complete calculations, based on their increasingly sophisticated number facts and place value knowledge.

Four pots each containing two flowers which each have seven petals. How many petals in total?



$$(4 \times 2) \times 7 \quad \text{or} \quad 4 \times (2 \times 7)$$

### Short multiplication of 3-digit number by 1-digit number

To begin with pupils are presented with calculations that require no regrouping or only regrouping from the ones to the tens. Their conceptual understanding is supported by the use of place value counters, both during teacher demonstrations and during their own practice. With practice pupils will be able to regroup in any column, including from the hundreds to the thousands, including being able to multiply numbers containing zero and regrouping through multiple columns in a single calculation. This method and the language to use are best understood through the tutorial videos found here on the toolkit.

Exemplification of this process is best understood through viewing the video tutorial



To calculate  $241 \times 3$ , represent the number 241. Multiply each part by 3, regrouping as needed.



$$\begin{array}{r}
 241 \\
 \times \quad 3 \\
 \hline
 723 \\
 \hline
 1
 \end{array}$$

