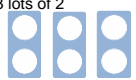



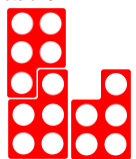

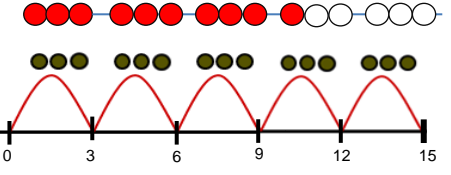
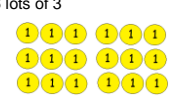
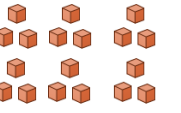

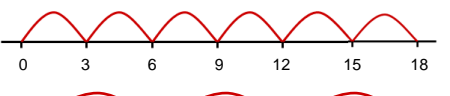
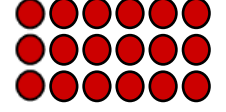
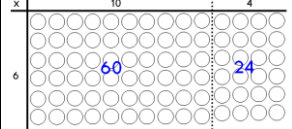


# Hilton Primary School Calculation Policy : Multiplication

	Age related expectations	Methods				Rapid recall	Mental calculation																																																		
EYFS	Solve (practical) problems that involve doubling.	<b>Practical / recorded using ICT</b> (e.g. digital photos / pictures on IWB) 	<b>Manipulative/Concrete Apparatus</b> 3 plates, 2 cakes on each plate: 	<b>Pictures / Objects</b> 3 plates, 2 cakes on each plate: 	<b>Symbols</b> 3 plates, 2 cakes on each plate: 																																																				
Y1	Solve (practical) problems that involve combining groups of 2, 5 or 10  <i>Multiplication as arrays, number patterns and counting in 2's, 5's and 10's and apply to calculations</i>	<b>Manipulative/Concrete Apparatus</b> 3 lots of 5 	<b>Pictures / Symbols</b> There are five sweets in one bag. How many sweets are there in three bags? 	<b>Number tracks / Number line</b> (modelled using bead strings) $5 \times 3$ (or $3 \times 5$ ) three, five times or five groups of three 	Count on / back in 1s, 2s, 5s and 10s  Doubles of numbers to 10																																																				
Y2	Multiplication as repeated addition and arrays and relate to grouping  As Y1 plus multiples of 3 and apply to calculations and problem solving	<b>Manipulative/Concrete Apparatus</b> 6 lots of 3  	<b>Pictures / Symbols</b> There are three apples in each box. How many apples in six boxes? 	<b>Repeated addition</b> $6 \times 3$ or $3 \times 6$  Recording of the steps on the number line may be refined as understanding and knowledge of facts develops	<b>Arrays</b> $6 \times 3$ or $3 \times 6$  Children start by understanding multiplication as arrays and repeated addition. They use this understanding to help them work out multiplication facts they cannot recall quickly	Multiplication facts for the 2, 5 and 10 x tables.  Doubles of numbers to 20	Solve problems involving the 2, 5 and 10 times table.																																																		
Y3	2 digit x 1 digit (e.g. $13 \times 4$ )  As Y2 plus multiples of 4 and 8 and apply to calculations and apply to problem solving	Continuing to use Manipulative/Concrete Apparatus as necessary	<b>Partitioning</b> Children may still need this modelled as an array to show partitioning) $14 \times 6$ $10 \times 6 = 60$ $4 \times 6 = 24$ 	<b>Expanded vertical</b> $\begin{array}{r} 43 \\ \times 6 \\ \hline 18 \quad (3 \times 6) \\ 240 \quad (40 \times 6) \\ \hline 258 \end{array}$	<b>Short multiplication</b> $\begin{array}{r} 43 \\ \times 6 \\ \hline 258 \end{array}$	<b>Long Multiplication</b> $256 \times 18$ (estimate $250 \times 20 = 5000$ ) $\begin{array}{r} 256 \\ \times 18 \\ \hline 2048 \\ 2560 \\ \hline 4608 \\ 1 \end{array}$ Answer $256 \times 18 = 4608$	Multiplication facts for the 3, 4 and 8 x tables.  Recognise multiples of 2, 3, 4, 5, 8, 10, 50 and 100.	Solve problems involving the 3, 4 and 8 times table.  Use commutatively to help solve calculations (e.g. $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$ )  Use related facts to 2 digit numbers. (e.g. $3 \times 2 = 6$ , $30 \times 2 = 60$ )																																																	
Y4	Multiply 2 digit and 3 digit numbers by 1 digit no using formal written and apply to calculations and problem solving		$43 \times 6$ (estimate: $40 \times 6 = 240$ ) $40 \times 6 = 240$ $3 \times 6 = 18$ Some children may need this modelling on a number line e.g.	$\begin{array}{r} 237 \times 4 \\ \text{(estimate } 250 \times 4 = 1000) \\ 237 \\ \times 4 \\ \hline 28 \\ 120 \\ 800 \\ \hline 948 \end{array}$	$\begin{array}{r} 4.7 \times 8 \\ \text{(estimate } 5 \times 8 = 40) \\ 4.7 \\ \times 8 \\ \hline 37.6 \\ 5 \end{array}$	$\begin{array}{r} 256 \\ \times 18 \\ \hline 2048 \\ 2560 \\ \hline 4608 \\ 1 \end{array}$ Answer $256 \times 18 = 4608$	Recall multiplication facts up to $12 \times 12$  Count in multiples of 6, 7, 9, 25 and 1000.	Use place value to multiply (e.g. $2 \times 3 = 6$ , $200 \times 3 = 600$ )  TU x U (e.g. $39 \times 7 = 30 \times 7 + 9 \times 7$ )  TU and U x 10 and 100																																																	
Y5	Multiply up to 4 digit numbers by 1 or 2 digit numbers using formal written including long multiplication for 2 digit numbers and apply to calculations and problem solving		$\begin{array}{c} +60 \quad +12 \\ \text{---} \quad \text{---} \\ 0 \quad 60 \quad 72 \end{array}$ This will support children in learning their tables using known facts and in understanding the distributive law which they will apply later when using the grid method.	$\begin{array}{r} 2327 \times 8 \\ \text{(estimate: } 2300 \times 10 = 23000) \\ 2327 \\ \times 8 \\ \hline 56 \\ 160 \\ 2400 \\ \hline 16000 \\ \hline 18616 \end{array}$		Prime numbers to 19  Square and cubed numbers to 100.	Multiply whole numbers and decimals by 10, 100 and 1000.  Prime numbers to 100																																																		
Y6	Multiply multi-digit numbers up to 4 digits by a 2 digit whole no. using formal written methods of long multiplication. Apply to calculations and problem solving. Multiply nos. up to 2dp by 1 digit nos.		<b>Grid Method</b> $23 \times 8$ <table border="1"> <tr><td>x</td><td>2</td><td>0</td><td>3</td><td>1</td><td>6</td><td>0</td></tr> <tr><td>8</td><td>1</td><td>6</td><td>0</td><td>2</td><td>4</td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>8</td><td>4</td></tr> </table> $72 \times 38$ <table border="1"> <tr><td>x</td><td>70</td><td>2</td><td></td><td></td></tr> <tr><td>30</td><td>2100</td><td>60</td><td></td><td>2100</td></tr> <tr><td>8</td><td>560</td><td>16</td><td></td><td>+ 560</td></tr> <tr><td></td><td></td><td></td><td></td><td>+ 60</td></tr> <tr><td></td><td></td><td></td><td></td><td>+ 16</td></tr> <tr><td></td><td></td><td></td><td></td><td><u>2736</u></td></tr> </table>	x	2	0	3	1	6	0	8	1	6	0	2	4						1	8	4	x	70	2			30	2100	60		2100	8	560	16		+ 560					+ 60					+ 16					<u>2736</u>			As above
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