
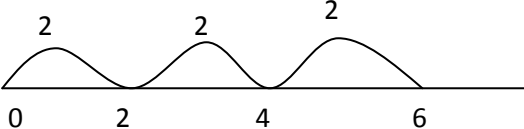
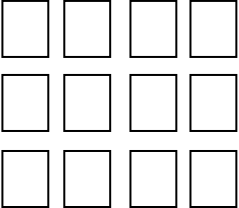

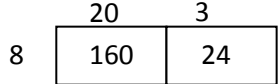
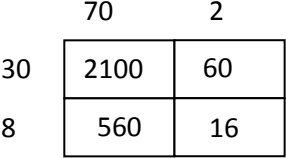


## Calculation Policy – Multiplication

Stage Name	Examples	Recording Method
Practical Examples	Doubling using the language of multiplication	
Pictorial Representation	How many groups of (lots of) 2 are there?	Mostly pictorial representation:  How many groups of two are there?  Use of concrete apparatus for the children to physically count and see. Extend to written digit representation.
Repeated Addition (Number line)	I have 3 pairs of shoes – how many shoes do I have altogether?	
Decoding arrays and repeated addition (larger numbers)	Multiply 5 by 8  How many fives in 35?  A baker puts 6 buns in 4 rows. How many altogether?  Double 32  What is the product of 25 and 4?	Describe arrays:  $4 \times 3 = 12$   $3 \times 4 = 12$  Plus repeated addition (number lines)
Grid Method	Multiply 31 by 8  Calculate $345 \times 9$	$23 \times 8 =$   $160 + 24 = 184$  $72 \times 38 =$    $\begin{array}{r} 2100 \\ 560 \\ 60 \\ + 16 \\ \hline 2736 \end{array}$
Expanded Vertical	What is the product of $125 \times 4$ ?  Calculate $4346 \times 9$	$\begin{array}{r} 4346 \\ \times 9 \\ \hline 54 \\ 360 \\ 2700 \\ 36000 \\ \hline 39114 \end{array}$

Short Multiplication	As above.	$2741 \times 6$ becomes $\begin{array}{r} 2741 \\ \times \quad 6 \\ \hline 16446 \\ \hline \end{array}$ <p>4 2</p> <p>Answer: 16 446</p>
Long Multiplication	$158 \times 67 = 10586$	$\begin{array}{r} 158 \\ \times 67 \\ \hline 1106 \\ 9480 \\ \hline 10586 \end{array}$ <p>10586 = Answer</p> <p>Find the answer by adding the two calculations together.</p>
Multiplying a fraction by a fraction	$3/4 \times 2/3 =$	$\frac{3 \times 2}{4 \times 3} = \frac{6}{12} = \frac{1}{2}$
Multiplying a fraction by a whole number	$\frac{2}{3} \times 12 =$	$\frac{2}{3} \times \frac{12}{1} = \frac{2 \times 12}{3 \times 1} = \frac{24}{3} = \frac{8}{1} = 8$