
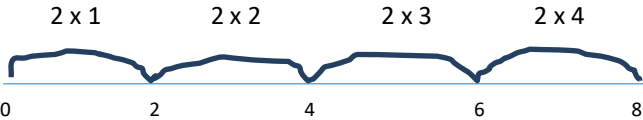


## Multiplication: Written Calculations

EYFS:	Objectives (by end of year)
<p>Children will engage in a wide variety of songs and rhymes, games and practical activities.</p> <p>In practical activities and through discussion they will begin to use the vocabulary associated with doubling.</p> <p>E.g. ‘Three stars for you and three stars for me. How many stars altogether?’</p> <div style="text-align: center;">  </div>	<p>Solve problems, including doubling.</p>
<b>Year 1: Grouping</b>	
<p>Children will count repeated groups of the same size in practical contexts. They will solve practical problems that involve combining groups of 2, 5 or 10. E.g. socks, fingers, cubes</p> <p>e.g. ‘Six pairs of socks. How many socks altogether? 2, 4, 6, 8, 10, 12’</p>	<p>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</p> <p>Count in multiples of 2s, 5s and 10s.</p>
<b>Year 2: Grouping / Arrays / Repeated addition</b>	
<p>Counting in steps of 2s, 5s and 10s            Missing numbers e.g. 2, 4, ?, 8            Multiplying by 2 (doubling) and dividing by 2 (halving)</p> <p>e.g. <math>2 \times 4</math> (language to use: two multiplied by four, or two (pause) times four.)</p> <div style="text-align: center;">  </div> <p>Repeated addition  <math>2 + 2 + 2 + 2</math>  <math>\begin{array}{c} \times \times \\ \times \times \\ \times \times \\ \times \times \end{array}</math></p> <p>Using arrays to demonstrate and support the commutative law</p> $\begin{array}{ccccccc} \times \times \times \times & & & & \times \times & & \\ \times \times \times \times = & 4 \times 2 & = & \begin{array}{c} \times \times \\ \times \times \end{array} & = & \begin{array}{c} \times \times \\ \times \times \end{array} & = 2 \times 4 \end{array}$	<p>Recall and use multiplication facts for the 2, 5 and 10 multiplication tables.</p> <p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs.</p> <p>Solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts.</p> <p>Show that multiplication of two numbers can be done in any order (commutative).</p>

### Year 3: Expanded method

Revise all work for 2, 5 and 10 times and divide from year 2.

Expanded multiplication leading to a short method:

$$\begin{array}{r} 16 \\ \underline{3} \\ 18 \text{ (6 x 3)} \\ \underline{30} \text{ (10 x 3)} \\ 48 \end{array}$$
$$\begin{array}{r} 16 \\ \times 3 \\ \underline{48} \\ 1 \end{array}$$

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.

Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems

(E.g. 4 times as high, 8 times as long) and correspondence problems in which  $n$  objects are connected to  $m$  objects. (E.g. 3 hats and 4 coats)

### Year 4: Short multiplication

Expanded column multiplication (see year 3) moving to short multiplication.

Return to expanded if necessary when the difficulty of numbers is increased.

$$\begin{array}{r} 26 \\ \times 3 \\ \underline{78} \\ 1 \end{array}$$
$$\begin{array}{r} 126 \\ \times 3 \\ \underline{378} \\ 1 \end{array}$$

$$\begin{array}{r} 724 \\ \times 3 \\ \underline{2172} \\ 1 \end{array}$$

Recall multiplication and division facts for multiplication tables up to  $12 \times 12$ .

Multiply two-digit and three-digit numbers by a one-digit number using a formal written layout.

Use decimals in the context of money. E.g.  $\pounds 2.34 \times 6 = \pounds 14.04$

### Year 5: Short and long multiplication

Return to expanded (see below) if necessary when difficulty of numbers is increased.

$$\begin{array}{r} 472 \\ \times 5 \\ \underline{2360} \\ 3 \text{ 1} \end{array}$$
$$\begin{array}{r} 56 \\ \times 27 \\ \underline{392} \\ 1120 \\ \underline{1512} \\ 1 \end{array}$$

Multiply numbers up to four digits by a one or two-digit number using a formal short written method, including long multiplication for two-digit numbers.

Use decimals in context up to hundredths multiplied by one-digit. (e.g. money and measures;  $\pounds 36.73 \times 4 = \pounds 146.92$ )

<p>Expanded if necessary:</p> $  \begin{array}{r}  18 \\  \times \underline{13} \\  24 \quad (3 \times 8) \\  30 \quad (3 \times 10) \\  80 \quad (10 \times 8) \\  \underline{100} \quad (10 \times 10) \\  \underline{234} \\  1  \end{array}  $	
<b>Year 6: Long multiplication</b>	
$  \begin{array}{r}  134 \\  \times \underline{32} \\  268 \\  \underline{4020} \\  4288  \end{array}  $ <p>Our aim is that by the end of Year 6, children use mental methods (with jottings) when appropriate, but for calculations they can not do in their heads, they use an efficient, formal, written method accurately and with confidence.</p>	<p>Multiply multi-digit numbers (including decimals) up to four-digits by a two-digit whole number using the formal written method of long multiplication.</p>