

## Formal short multiplication

$$36 \times 4 = 144$$

$$\begin{array}{r} 36 \\ \times 4 \\ \hline 144 \\ 2 \end{array}$$

### Multiplication - Year Four

- Recall multiplication facts for multiplication tables up to  $12 \times 12$
- Multiply two-digit and three-digit numbers by a one-digit number using **formal written** layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

Continue to use empty number lines, as appropriate.

Further develop the grid method for two-digit numbers multiplied by a one- digit number.

**Expanded short multiplication** (two- digit number by a one-digit number):

Refine the recording in preparation for **formal short multiplication**:

$$36 \times 4 = 144$$

$$\begin{array}{r} 36 \\ \times 4 \\ \hline + 24 \quad (4 \times 6) \\ 120 \quad (4 \times 30) \\ \hline 144 \end{array}$$

This leads to short multiplication (formal method) of a two-digit number multiplied by a one - digit number:

### Multiplication - Year Five

- Multiply numbers up to 4 digits by a one or two-digit number using a **formal written method**, including long multiplication for two-digit numbers

Build on the work covered in Year 4 with the **formal method of short multiplication** (two- digit number multiplied by a one-digit number). When children are confident introduce multiplication by a two-digit number. If necessary, return to the grid method and/or expanded method first.

Grid method (two-digit number multiplied by a teen-number):

$$23 \times 13 = (20 + 3) \times (10 + 3) = 299$$

X	20	3
10	200	30
3	60	9

$$\begin{array}{r} 230 \\ + 69 \\ \hline 299 \end{array}$$

Add the partial products  $(200 + 30) + (60 + 9) = 299$

## Formal short multiplication

$$56 \times 27 = 1512$$

$$\begin{array}{r} 56 \\ \times 27 \\ \hline 392 \\ + 1120 \\ \hline 1512 \end{array}$$

### Multiplication - Year Six

- Multiply multi-digit numbers (including decimals) up to 4 digits by a two- digit whole numbers

Continue to practise and develop the formal short multiplication method and formal long multiplication method with larger numbers and decimals throughout.



## Stages in Multiplication

### Mental methods of calculation

Oral and mental work in mathematics is essential, particularly so in calculation. Early practical, oral and mental work must lay the foundations by providing children with a good understanding of how the four operations build on efficient counting strategies and a secure knowledge of place value and number facts.

Later work must ensure that children recognise how the operations relate to one another and how the rules and laws of arithmetic are to be used and applied.

### Multiplication - Early Stages (EYFS)

Children will engage in a wide variety of songs and rhymes, games and activities.

In practical activities and through discussion they will begin to solve problems involving doubling.



'Three apples for you and three apples for me. How many apples altogether?'



## Multiplication - Year One

- ♦ Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
- ♦ Count in multiples of twos, fives and tens (to the 10th multiple)

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 and cubes.



'Six pairs of socks.

How many socks altogether? 2, 4, 6, 8, 10, 12'

Use arrays to support early multiplication



'Five groups of two faces. How many faces altogether? 2, 4, 6, 8, 10'

Two groups of five faces. How many faces altogether? 5, 10' '2 groups of 5' 'How many altogether?' '5 + 5 = 10'

Double five is ten

## Multiplication - Year Two

- ♦ Recall and use multiplication facts for the 2, 5 and 10 multiplication tables including recognising odd and even numbers
- ♦ Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs
- ♦ Solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts
- ♦ Show that multiplication of two numbers can be done in any order (commutative)

Combining Groups (repeated addition):



'3 groups of 10 crayons'

'How many crayons altogether?'

'10 + 10 + 10 = 30'

'3 groups of 10' '3 times ten'

'3 x 10 = 30' '10 x 3 = 30'

Using arrays to support multiplication:

6 x 5 = 30



'5 + 5 + 5 + 5 + 5 + 5 = 30'

'6 rows of 5'

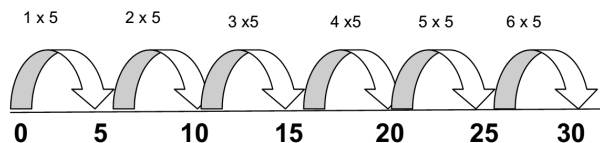
'6 groups of 5'

'5 groups of 6'

'5 x 6 = 30'

'6 x 5 = 30'

**Repeated addition  
using a number line**  
**6 x 5 = 30**



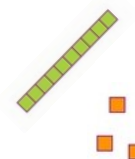
Make the link to repeated addition.

## Multiplication - Year Three

- ♦ Recall and use multiplication facts for the 3, 4 and 8 multiplication tables (continue to practise the 2, 5 and 10 multiplication tables)

- ♦ Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and **progressing to a formal written method**
- ♦ Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Continue to use number lines and arrays to support multiplication, as appropriate.



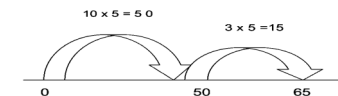
## Partitioning

**13 x 5 = 65**

**10 x 5 = 50**

**3 x 5 = 15**

**50 + 15 = 65**



## Grid method

**13 x 8 = 104**

X	10	3
8	80	24

80 + 24 = 104

## Expanded short multiplication

**36 x 4 = 144**

**30 + 6**

**x 4**

**144** (4 x 6 = 24)  
**+ 120** (4 x 30 = 120)  
**144**