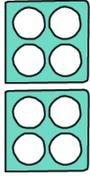


# Multiplication Early Years Foundation Stage

<p><b>Prior Learning</b></p> <ul style="list-style-type: none"> <li>Separate a group of objects in different ways recognising that the total stays the same.</li> </ul>	<p><b>Models &amp; Images</b></p> <p>Practical resources in simple problems:</p> <p>'Neil has 3 apples. Sita has 3 apples. How many apples are there altogether?'</p> 	<p><b>Signs &amp; Symbols</b></p> <p>Not appropriate for this year group</p>	<p><b>Key Language</b></p> <p>more / less groups of / lots of share</p> <p>Extend to: repeated addition repeated subtraction</p>
<p><b>Skills for next steps (Y1 Skills)</b></p> <ul style="list-style-type: none"> <li>Count in multiples of 1, 2, 5 &amp; 10.</li> <li>Solve simple multiplication &amp; division with apparatus &amp; arrays.</li> </ul>	<p><b>Mental Methods</b></p> <p>Counting in groups of 2, 10 and 5.</p>  <p>Doubling using numicon and other objects.</p> <p>Double 4 = 8</p>	<p><b>Written Methods</b></p> <p>Not appropriate for this year group</p>	<p><b>Resources</b></p> <p>Practical objects Numicon</p>

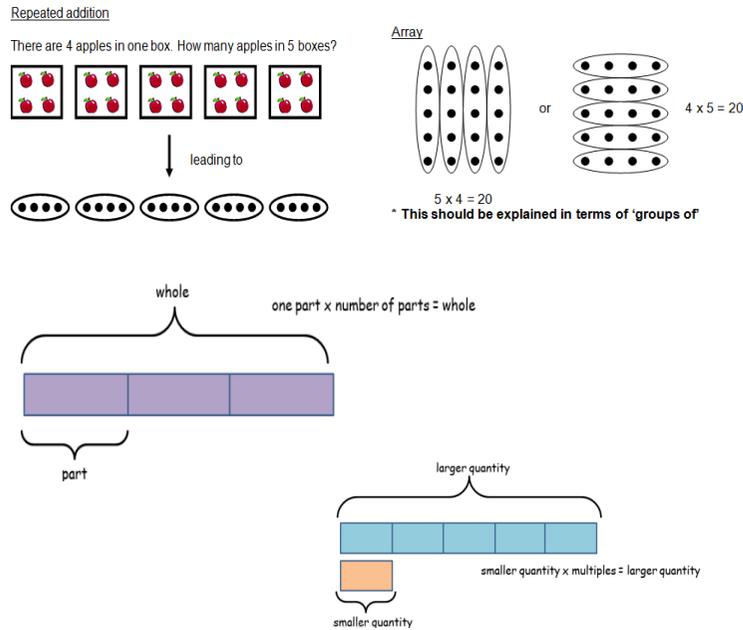
Although these methods will be modelled by staff in school, children should experience calculations in a variety of other forms and presentations to support their understanding of maths in the wider world.

# Multiplication Key Stage 1 (Yr 1/2)

## Prior Learning (EYFS Skills)

- Count reliably to 20.
- Order numbers 1 – 20.
- Say 1 more/1 less to 20.
- Add & subtract two single digit numbers.

## Models & Images



## Signs & Symbols

$$\square \times 2 = 12$$

$$12 = 2 \times \square$$

$$7 \times 5 = \square$$

$$\square = 5 \times 7$$

$$9 \times \square = 90$$

$$90 = \square \times 9$$

## Key Language

Multiply, multiplication, times, repeated addition, groups of, lots of

Divide, division, share, share equally, repeated subtraction

## Skills for next steps (Y3 Skills)

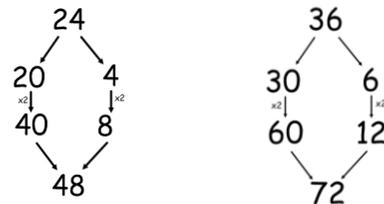
- Count from 0 in multiples of 4, 8, 50 & 100.
- Recall & use multiplication & division facts for 3, 4, 8 tables.
- Multiply:
  - 2-digit by 1-digit

## Mental Methods

Learn 2, 10 and 5 times tables by heart.  
(Connect x 10 to place value, and x5 to divisions on clock face.)

Counting in steps of 2, 3, 5 from 10.  
Counting in 10s from any number.

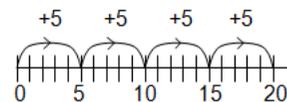
Doubling by partitioning:



## Written Methods

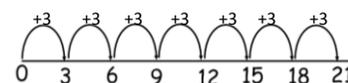
Multiplying on a written number line:

$$4 \times 5 = 20$$



Multiplying on a blank number line:

$$7 \times 3 = 21$$

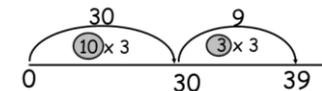


Children need to understand that multiplication can be done in any order, and read multiplication sentences in **both** ways:

$4 \times 5 = 4$  groups/lots of 5  
i.e.  $5 + 5 + 5 + 5$ .

$4 \times 5 = 4$  multiplied 5 times  
i.e.  $4 + 4 + 4 + 4 + 4$

$$13 \times 3 = 39$$



## Resources

Practical objects  
Numicon  
Number lines  
Hundred Squares  
Dienes blocks  
Cuisenaire rods

# Multiplication Lower Key Stage 2 (Yr 3/4)

## Prior Learning (Y2 Skills)

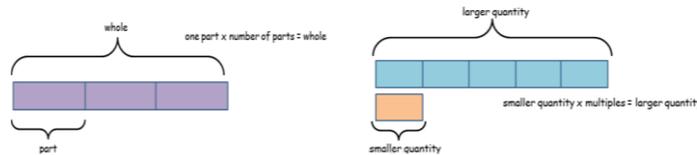
- Count in multiples of 2, 3 & 5 & 10 from any number up to 100.
- Recall & use multiplication & division facts for 2, 5 & 10 tables.
- Calculate & write multiplication & division calculations using multiplication tables.
- Recognise & use inverse.

## Models & Images

**Repeated addition:**  
A dog has 4 legs. How many legs do 6 dogs have?

**Scaling:**  
Make a red tower 5 cubes high.  
Make a blue tower 4 times as high.

**Arrays:**  
Use of arrays from KS1 to continue.



## Signs & Symbols

Understand x can be done in any order

$$5 \times 8 = 8 \times 5$$

$$5 \times 7 = \square \times 5$$

$$3 \times 7 = 21$$

$$\triangle \times 7 = 21$$

$$\square \times \triangle = 21$$

Recognise that x is the inverse of  $\div$

$$4 \times 3 = 12$$

$$3 \times 4 = 12$$

$$12 \div 3 = 4$$

$$12 \div 4 = 3$$

$$90 \times 6 = \square$$

$$8 \times \square = 560$$

$$\square \times 90 = 720$$

## Key Language

Multiply, multiplication, times, Multiples of, product, repeated addition, groups of, lots of

Divide, division, share, share equally, repeated subtraction, divide in to

## Skills for next steps (Y5 Skills)

- Identify all multiples & factors, including finding all factor pairs.
- Use known tables to derive other number facts.
- Multiply:
  - 4-digits by 1-digit/ 2-digit
- Divide:
  - 4-digits by 1-digit
- Multiply & divide:
  - Whole numbers & decimals by 10, 100 & 1000

## Mental Methods

By the end of Year 4:

- Recall multiplication and division facts for multiplication tables up to 12 x 12.
- Count from 0 in multiples of 4, 6, 7, 8, 9, 25, 50 and 100.
- Find 100 more or less than a given number.
- Find 1000 more or less than a given number.
- Use place value, know and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers.
- Recognise and use factor pairs and commutativity in mental calculations.

Please refer to the National Curriculum for year group-specific objectives.

## Written Methods

Use of number line:

$$5 \times 4 = 20$$



Grid method:

x	20	7	
50	1000	350	1350
6	120	42	162
			1512

x	300	40	2
7	2100	280	14

$$\begin{array}{r} \text{Th H T U} \\ 2100 \\ 280 \\ + 14 \\ \hline 2394 \end{array}$$

Short multiplication:

$$\begin{array}{r} \text{Th H T U} \\ 342 \\ \times 7 \\ \hline 14 \\ 280 \\ 2100 \\ \hline 2394 \end{array}$$



$$\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ \hline 21 \end{array}$$

## Resources

Practical objects  
Numicon  
Number lines  
Hundred Squares  
Dienes blocks  
Cuisenaire rods

# Multiplication Upper Key Stage 2 (Yr 5/6)

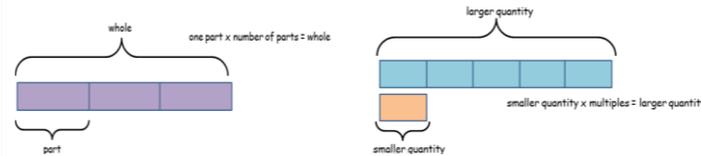
## Prior Learning (Y4 Skills)

- Count in multiples of 6, 7, 9, 25 & 1000.
- Recall & use multiplication & division facts all tables to 12x12.
- Multiply:
  - 2-digit by 1-digit
  - 3-digit by 1-digit
- Divide:
  - 3-digit by 1-digit

## Models & Images

Models and images should be used to support children in visualising calculations and to secure understanding.

When solving problems in different contexts, children should be encouraged to represent the problem visually for support. E.g. using the bar method.



## Signs & Symbols

Working rapidly using known facts:

$$70 \times 6 = \square \quad 11 \times \square = 88 \quad \square \times 9 = 0.36 \quad \triangle \times \triangle = 21$$

$$72 \times 6 = \square \quad 180 \times \square = 540 \quad \square \times 9 = 189$$

$$(14 \times \square) + 8 = 50 \quad 46 \times 28 = \square$$

$$0.7 \times 20 = \square \quad 20 \times \square = 8000 \quad \square \times 5 = 3.5$$

$$4 \times 0.9 = \square \quad 0.3 \times \square = 2.4 \quad \square \times 0.4 = 2$$

$$132 \times 46 = \square \quad \square \times 9 = 18.9 \quad (24 \times \square) + 8 = 3008$$

$$38 \times \square = 190$$

## Key Language

Multiply, multiplication, times, Multiples of, product, repeated addition, groups of, lots of

Divide, division, share, share equally, repeated subtraction, divide in to

## Skills for next steps

- Understand and use place value for decimals, measures and integers of any size.
- Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions and mixed numbers, all both positive and negative.
- Recognise and use relationships between operations including inverse operations.

## Mental Methods

**By the end of Year 6:**

- Find factor pairs of numbers.
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- Identify common factors, common multiples and prime numbers.
- Multiply and divide numbers mentally drawing upon known facts.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ ).

*Please refer to the National Curriculum for year group-specific objectives.*

**Format of a place value grid when multiplying and dividing by 10, 100 and 1000:**

Th	H	T	U	t	h	th
			5	6		
		5	6	0		

## Written Methods

Use of various methods: grid, short and long multiplication should be taught where up to 4 digits are being multiplied by numbers with two digits:

Grid:

	x	6
500		3000
40		240
9		54
		3294

Long Multiplication:

$$\begin{array}{r}
 12 \\
 124 \\
 \times 26 \\
 \hline
 744 \\
 2480 \\
 \hline
 3224 \\
 11
 \end{array}$$

Short Multiplication:

$$\begin{array}{r}
 2741 \\
 \times 6 \\
 \hline
 16446 \\
 42
 \end{array}$$

## Resources

Numicon  
Number lines  
Hundred Squares  
Dienes blocks  
Cuisenaire rods