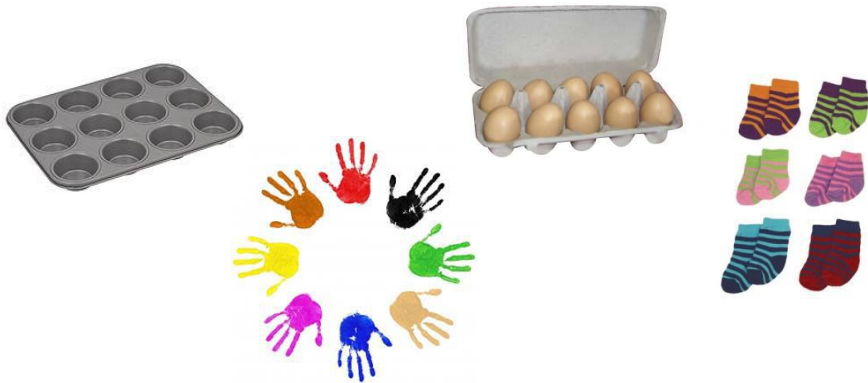


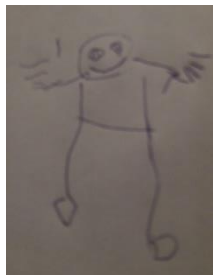
**Stage 1**

**End of stage objective:**

Children will experience equal groups of objects and will count in 2s and 10s and begin to count in 5s. They will work on practical problem solving activities involving equal sets or groups. They will explore this through learning opportunities such as role play and play dough activities.



They may record simple drawings



A child's jotting showing the fingers on each hand as a double.

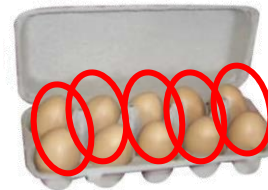


A child's jotting showing double three as three cookies on each plate.

**Stage 2**

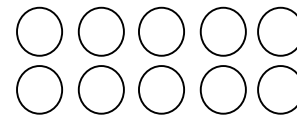
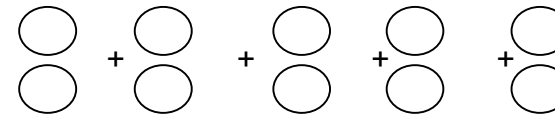
**End of stage objective:**

Children will continue to see multiplication in real life situations such as egg boxes, wrapping paper and ice cube trays.



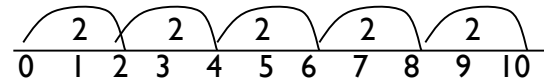
Children understand that multiplication is repeated addition and that can be done by counting in equal steps/group

$$2+2+2+2+2=10$$

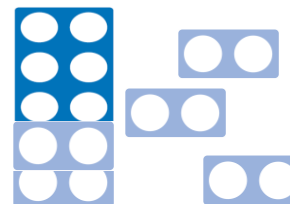


Children are introduced to an array. They understand that  $2 \times 5$  is the same as  $5 \times 2$ .

They may begin to record in a more formal fashion using a number line. This method is only to be used as a visual aid.



They use numicon and other visual aids to support their work.



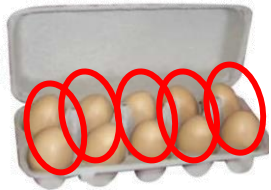
$$2+2+2+2+2=10$$

5 lots of 2 make 10

**Stage 2**

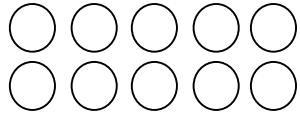
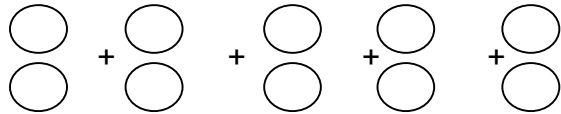
**End of stage objective:**

Children will continue to see multiplication in real life situations such as egg boxes, wrapping paper and ice cube trays.



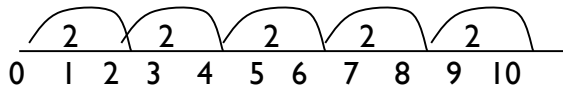
Children understand that multiplication is repeated addition and that can be done by counting in equal steps/group

$$2+2+2+2+2=10$$



Children are introduced to an array. They understand that  $2 \times 5$  is the same as  $5 \times 2$ .

They may begin to record in a more formal fashion using a number line. This method is only to be used as a visual aid.



They use numicon and other visual aids to support their work.



$$2+2+2+2+2=10$$



5 lots of 2 make 10

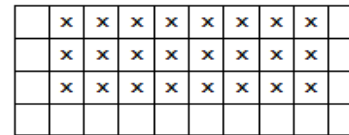


**Stage 3**

**End of stage objective:**

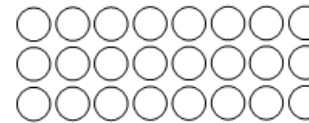
Children continue to use repeated addition

3 times 8 is  $8 + 8 + 8 = 24$  or 3 lots of 8 or  $3 \times 8$



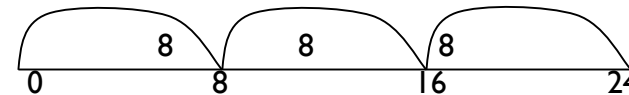
$$3 \times 8 = 8 + 8 + 8 = 24$$

They draw their own arrays to represent multiplication sentences.

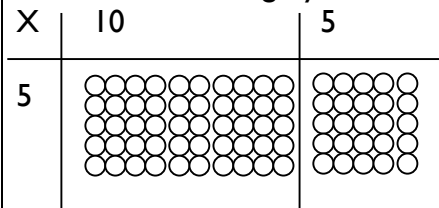


$$3 \times 8 = 8 + 8 + 8 = 24$$

They use a number line (as a visual aid) to solve multiplication problems.



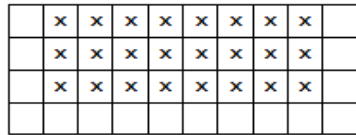
They begin to use their partitioning knowledge to multiply a single digit by a two digit number. In doing this they are introduced to the grid method. Visual imagery must be used at this stage.



**Stage 3**

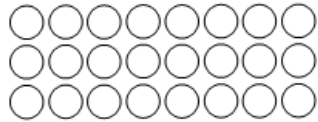
**End of stage objective:**

Children continue to use repeated addition  
3 times 8 is  $8 + 8 + 8 = 24$  or 3 lots of 8 or  $3 \times 8$



$3 \times 8 = 8 + 8 + 8 = 24$

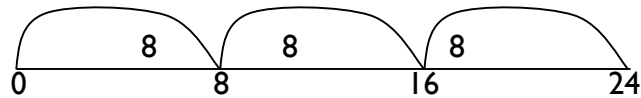
They draw their own arrays to represent



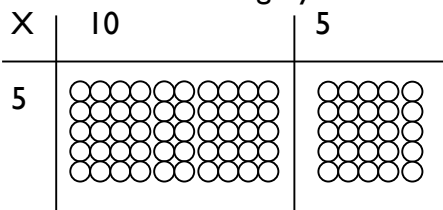
$3 \times 8 = 8 + 8 + 8 = 24$

multiplication sentences.

They use a number line (as a visual aid) to solve multiplication problems.



They begin to use their partitioning knowledge to multiply a single digit by a two digit number. In doing this they are introduced to the grid method. Visual imagery must be used at this stage.



**Stage 4**

**Stage 4**

**End of stage objective:**

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

**x = signs and missing numbers**

Continue using a range of equations as in stage 3 but with appropriate numbers

Partition

$38 \times 7 = 266$

$38 \times 7 = (30 \times 7) + (8 \times 7) = 266$

**OR**

Use the grid method of multiplication (as below)

**Pencil and paper procedures**

Grid method

x	30	8	
7	210	56	210 +56 <u>266</u>

Be careful to stick with multiplying by 100 to get the idea before moving onto stage 5.

x	100	30	8	
7	700	210	56	700 210 +56 <u>266</u>

When the children are ready then move on to **stage 5**.

**Stage 5**

**End of stage objective:**

**To multiply two- digit and three- digit numbers by a one-digit number using a formal written layout.**

**x = signs and missing numbers**

Continue using a range of equations as in Year 2 but with appropriate numbers.

Partition

$$38 \times 7 = 162$$

$$38 \times 7 = (30 \times 7) + (8 \times 7) = 266$$

**OR**

Use the grid method of multiplication (as below)

**Pencil and paper procedures**

Grid method

x	30	8	
7	210	56	210 <u>+56</u> <u>266</u>

Be careful to stick with multiplying by 100 to get the idea before moving onto stage 5.

x	00	30	8	
7	700	210	56	700 210 <u>+56</u> <u>266</u>

When the children are ready then move on to **stage 5**.

**End of stage objective:**

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

**Stage 5** now uses numbers larger than 100 in the hundreds column such as 200, 500, 700 etc. This is a lot harder for the children to get their head around and so they must have a firm understanding of place value. Use the grid method of multiplication (as below)

x	500	30	8	
7	3500	210	56	3500 210 <u>+ 56</u> <u>3766</u>

x	4000	500	30	8	
7	28000	3500	210	56	28000 3500 210 <u>+ 56</u> <u>31766</u> 1

When multiplying a two digit number by a two digit number, take extra care with place value (ten x ten). As the number of digits increases, the final addition becomes more difficult. Children can add across (or down if HTU x TU) mentally to make the column addition easier.

If the children are secure in using the grid method then they should move on to the expanded column method of multiplication.

x	70	2	
30	2100	60	= 2160
8	560	16	= <u>576</u> <u>2736</u> 1

### Stage 6 - Expanded Column Multiplication

Children should describe what they do by referring to the actual values of the digits in the columns. For example, the first step in  $38 \times 7$  is 'thirty multiplied by seven', not 'three times seven', although the relationship  $3 \times 7$  should be stressed.

Start with partitioning / expanded, with children recording each stage in brackets, and as confidence increases, children can progress as shown below:

$30 + 8$	$38$	$538$	$4538$
$\times 7$	$\times 7$	$\times 7$	$\times 7$
<u>56</u> (8 x 7 = 56)	<u>56</u>	<u>56</u>	<u>56</u>
<u>210</u> (30 x 7 = 210)	<u>210</u>	<u>210</u>	<u>210</u>
<u>266</u>	<u>266</u>	<u>3500</u>	<u>3500</u>
		<u>3766</u>	<u>28000</u>
			<u>31766</u>
			1

$38$
$\times 17$
<u>56</u> (8 x 7 = 56)
<u>210</u> (30 x 7 = 210)
<u>80</u> (10 x 8 = 80)
<u>300</u> (30 x 10 = 300)
<u>646</u>
1

### Stage 7 - Shortened/Compact Column Multiplication

Children who are confident with the expanded version of column multiplication can progress to the compact version.

In the example below, the children begin by multiplying the multiplier (8) by the multiplicand (7), which is  $8 \times 7$ , resulting in 56. As this is compact the 50 will be carried below the line, lining up with the rest of the tens. Then 30 will be multiplied by 7, resulting in 210, however we need to add on the 50, resulting in 260. When this is placed in correct place, this leaves a product of 266, as shown below.

$38$	$538$	$38$
$\times 7$	$\times 7$	$\times 17$
<u>266</u>	<u>3766</u>	<u>266</u>
5	25	<u>5</u>
		<u>380</u>
		<u>646</u>
		1