Stages in Multiplication

Multiplication – EYFS **ELG – Solve problems that include doubling**

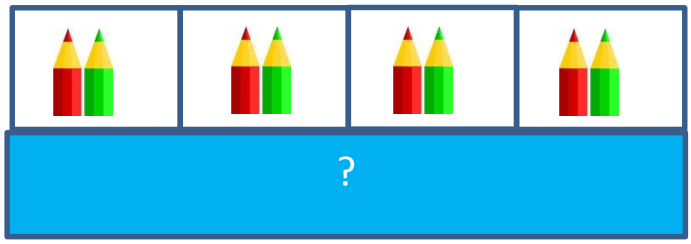
Use concrete objects to understand doubling

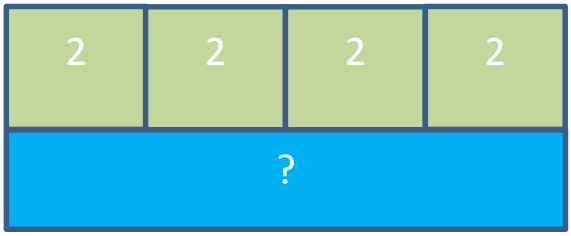
Multiplication - Year One **Multiply with concrete objects, arrays and pictorial representations**

Give the children experience of counting equal groups of objects in 2s, 5s and 10s.

Present practical problem solving activities involving counting equal sets or groups

Example multiplication problem: There are 4 tins with 2 pencils in each. How many pencils are there altogether?





2+2+2+2= 8

Key skills for Year 1

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

Key vocabulary: groups of, lots of, times, altogether, multiply

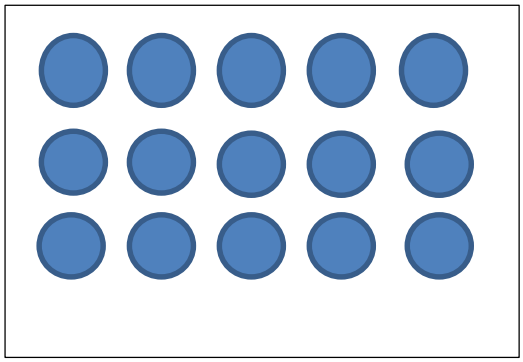
Multiplication - Year Two **Multiply using arrays and repeated addition (using at least 2s, 5s and 10s)**

Continue with repeated addition using a number line

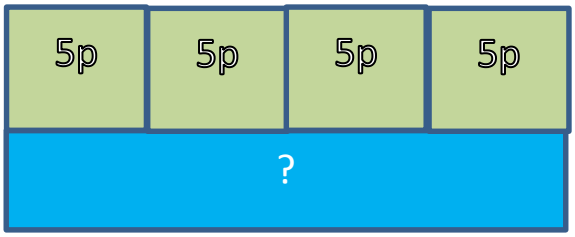
Starting from zero, make equal jumps up on a number line to work out multiplication facts and write multiplication statements using x and = signs

Use practical equipment to show arrays eg. Egg box, ice cube tray etc

Use arrays to help with commutative law of multiplication



5 x 3 = 3 + 3 + 3 + 3 + 3 = 15
3 x 5 = 5 + 5 + 5 = 15



Example multiplication problem:
Mrs. Brown has four 5p coins.
How much has she got altogether?

Key skills for Year 2

- Count in steps of 2,3,and 5 (Year 2) and 10 (Year 1)
- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables
- 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)

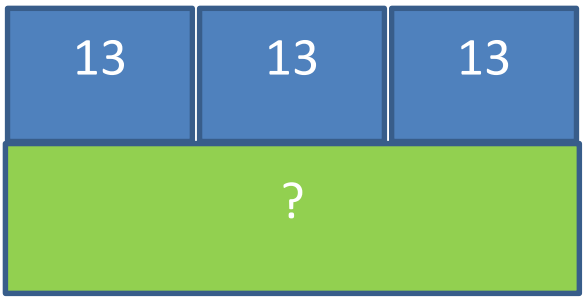
Key vocabulary: groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, commutative

Multiplication – Year Three **Multiply 2-digits by a single digit number**

Pre-requisites:

- Children must be able to partition numbers into tens and units (eg 23 = 20 and 3)
- Multiply multiples of ten by a single digit (e.g. 20 x 4) using their knowledge of multiplication facts and place value

Example multiplication problem:
There are 13 biscuits in each box. How many biscuits are there in 3 boxes?



13 x 3 = 13 + 13 + 13 = 39

Stage 1: Introduce the grid method for multiplying 2-digit by single-digits:

13 x 3

	10	3
X3	30	9

13 x 3 = 30 + 9 = 39

NB: Grid method not in NC

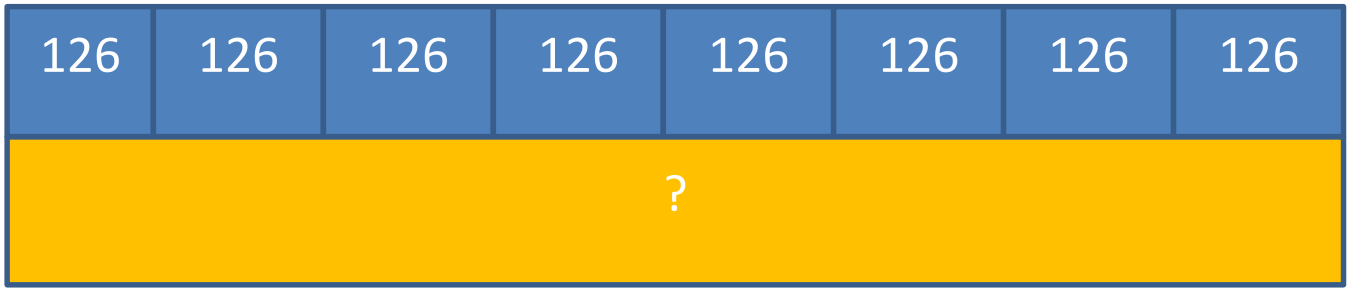
Key skills for Year 3

- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables (Y2)
- Recall and use multiplication facts for the 3, 4 and 8 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 written method
- Solve problems involving multiplication

Key vocabulary: groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, column, row, partition, grid method, multiple, product, commutative

Multiplication - Year Four **Multiply 2 and 3-digits by a single digit**

Example multiplication problem: There are 126 pencils in each box. How many pencils are there in 8 boxes?



Stage 1: Continue to develop the grid method for 2-digit numbers x by 1-digit (Year 3)

Stage 2: Develop for 3-digit numbers x by 1-digit

126 x 8

	100	20	6
x8	800	160	48

126 x 8 = 800
160
48
1008

NB: Grid method not in NC

Key skills for Year 4

- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables (Y2)
- Recall and use multiplication facts for the 3, 4 and 8 multiplication tables (Y3)
- Recall multiplication facts for multiplication tables up to 12 × 12
- Multiply two-digit and three-digit numbers by a one-digit number using a written method
- Solve problems involving multiplication

Key vocabulary: groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, column, row, partition, grid method, total, multiple, product, sets of, inverse, commutative

Multiplication - Year Five

Multiply up to 4-digits by 1 or 2 digits

Example multiplication problem: 8 people win £1345 each. How much is their total winnings?

Stage 1: Develop grid method (Year 4) to 4-digits x 1-digit

1345 x 8

	1000	300	40	5
x8	8000	2400	320	40

1345 x 8 = 8000
+ 2400
320
40
£10,760

Stage 2: Develop into expanded short multiplication

126
X 8
48 6 x 8
160 20 x 8
800 100 x 8
1008

Multi-digit numbers x by 2-digits: Continue teaching grid method
Example multiplication problem: There are 126 pencils in each box. How many pencils are there in 18 boxes?

x	100	20	6
10	1000	200	60
8	800	160	48

126 x 18 = 1000
+800
200
160
60
48
= 2268

NB: Grid method not in NC

Key skills for Year 5

- Recall multiplication facts for multiplication tables up to 12 × 12 (Year 4)
- Multiply up to 4-digit numbers by a 1- or 2- digit numbers using a written method
- Solve problems involving multiplication

Key vocabulary: groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, column, row, commutative, partition, grid method, total, multiple, product, inverse, multiplication

Multiplication - Year Six

Multiply multi-digit numbers up to 2 digits and Multiply decimals with up to 2d.p by a single digit

Example multiplication problem: There are 126 pencils in each box. How many pencils are there in 8 boxes?

Stage 1: Expanded short multiplication (fromYear 5)

126
X 8
48 6 x 8
160 20 x 8
800 100 x 8
1008

Stage 2: Develop into short multiplication

126
X 8
1008
2 4

Multi-digit decimals with up to 2d.p by a single digit: Continue teaching grid method
Example multiplication problem: CDs cost £7.58. How much will 7 cost?

x	7	0.5	0.08
7	49	3.5	0.56

£7.68 x 7 = 49.00
\+ 3.50
0.56
£53.06

NB: Grid method not in NC

Key skills for Year 6

- Recall multiplication facts for multiplication tables up to 12 × 12 (Year 4)
- Multiply multi-digit numbers by a 2- digit numbers using a written method
- Solve problems involving multiplication

Key vocabulary: partition, grid method, total, multiple, product, short / long multiplication, 'carry', tenths, hundredths, decimal