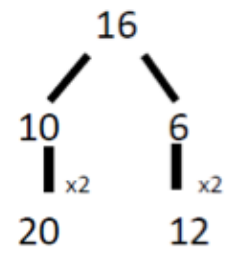
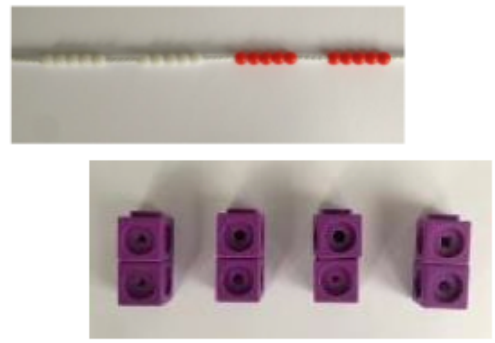
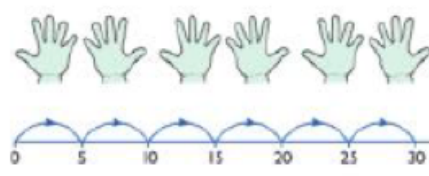
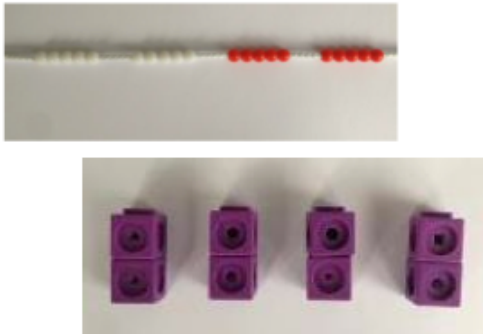
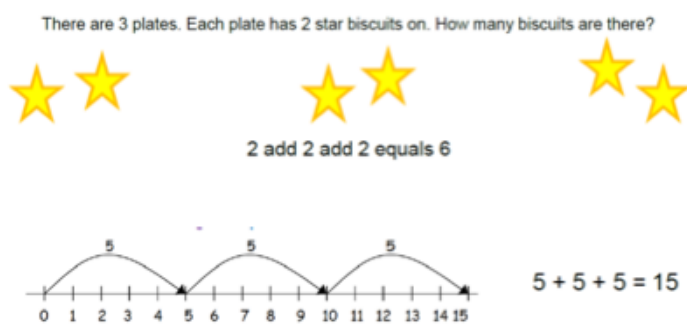
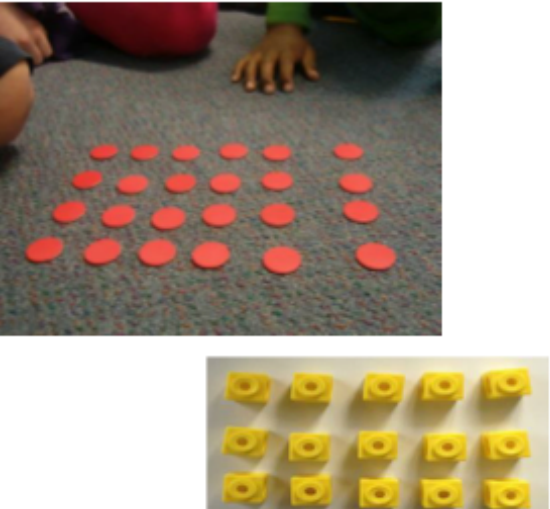
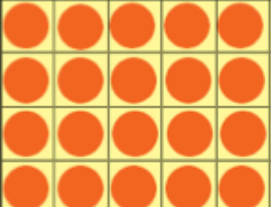


Progression in Calculations: MULTIPLICATION

Year group	Objective and strategies	Concrete	Pictorial	Abstract
1/2	Doubling	Use practical activities to show how to double a number.  double 4 is 8 $4 \times 2 = 8$	Draw pictures to show how to double a number. Double 4 is 8 	 Partition a number and then double each part before recombining it back together.
1/2	Counting in multiples	 Count in multiples supported by concrete objects in equal groups.	 Use a number line or pictures to continue support in counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30

Progression in Calculations: MULTIPLICATION

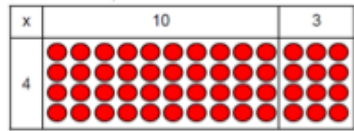
2	Repeated addition	 Count in multiples supported by concrete objects in equal groups.	There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?  2 add 2 add 2 equals 6 5 + 5 + 5 = 15	Write addition sentences to describe objects and pictures.  2 + 2 + 2 + 2 + 2 = 10
1/2	Arrays – showing commutative multiplication (5 x 2 = 2 x 5)	Create arrays using counters/ cubes to show multiplication sentences. 	Draw arrays in different rotations to find commutative multiplication sentences.  4 x 2 = 8 2 x 4 = 8 2 x 4 = 8 4 x 2 = 8  Link arrays to area of rectangles.	Use an array to write multiplication sentences and reinforce repeated addition.  5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15

Progression in Calculations: MULTIPLICATION

3

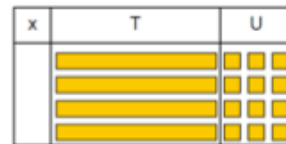
Grid method

Show the link with arrays to first introduce the grid method.



4 rows
of 10
4 rows
of 3

Move on to using Base 10 to move towards a more compact method.



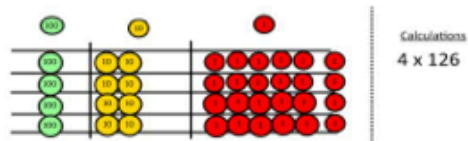
4 rows of 13

Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.



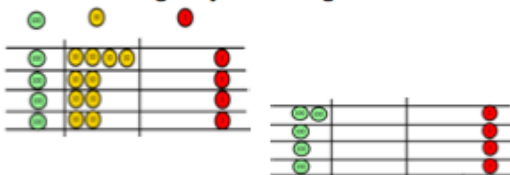
Calculations
4 x 126

Fill each row with 126.



Calculations
4 x 126

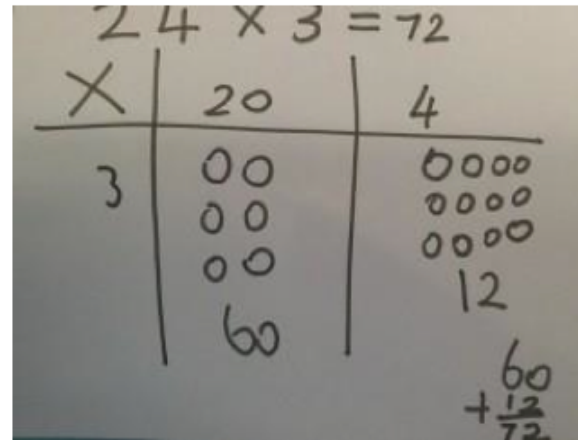
Add up each column, starting with the ones making any exchanges needed.



Then you have your answer.

Children can represent the work they have done with place value counters in a way that they understand.

They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.



Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

X	30	5
7	210	35

$$210 + 35 = 245$$

Moving forward, multiply by a 2 digit number showing the different rows within the grid method.

	10	8
10	100	80
3	30	24

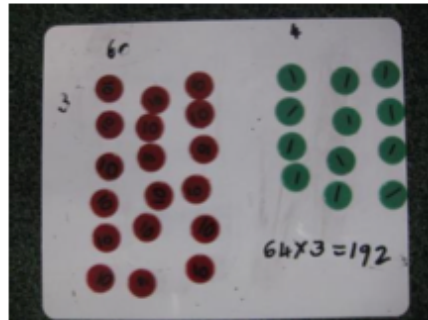
X	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

Progression in Calculations: MULTIPLICATION

4-6

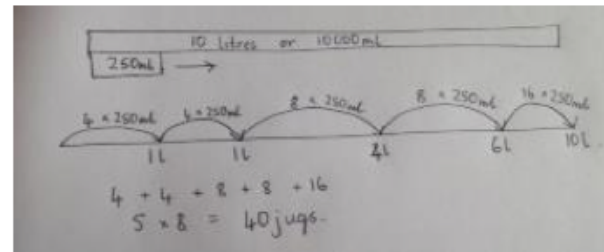
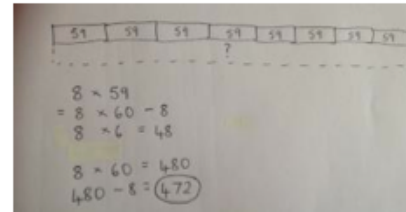
Column multiplication (long & compact)

Children can continue to be supported by place value counters at the stage of multiplication.



It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.

Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.



Start with long multiplication, reminding the children about lining up their numbers clearly in columns.

If it helps, children can write out what they are solving next to their answer.

$$\begin{array}{r} 32 \\ \times 24 \\ \hline 8 \quad (4 \times 2) \\ 120 \quad (4 \times 30) \\ 40 \quad (20 \times 2) \\ 600 \quad (20 \times 30) \\ \hline 768 \end{array}$$

$$\begin{array}{r} 74 \\ \times 63 \\ \hline 12 \\ 210 \\ 240 \\ + 4200 \\ \hline 4662 \end{array}$$

This moves to the more compact method.

$$\begin{array}{r} 231 \\ 1342 \\ \times 18 \\ \hline 13420 \\ 10736 \\ \hline 24156 \\ \hline 1 \end{array}$$

Progression in Calculations: MULTIPLICATION