Gillibrand Primary School

Maths Calculation Policy - Multiplication

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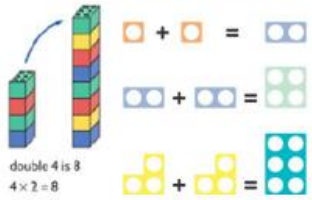
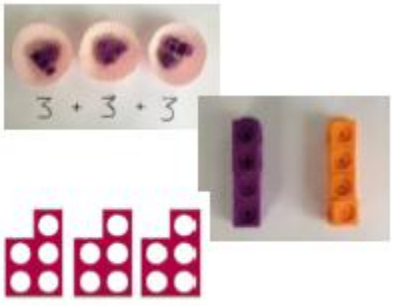
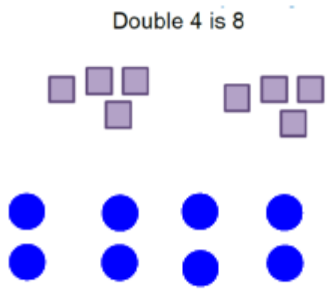
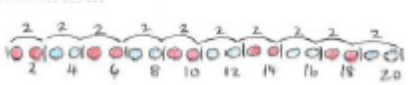
Calculation Policy: Multiplication

Key Vocabulary: multiply, multiple, groups of, times, lots of, repeated addition, product

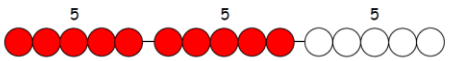
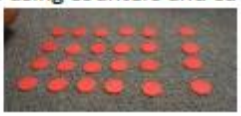
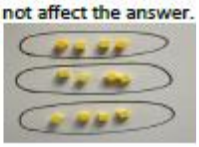
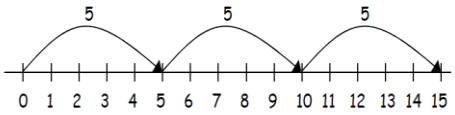
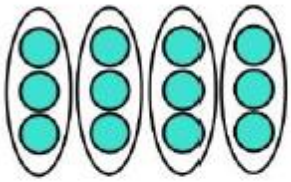
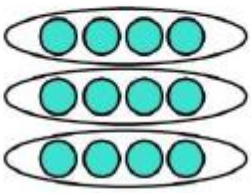
EYFS

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.

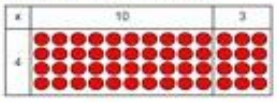
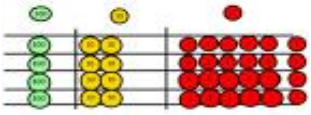
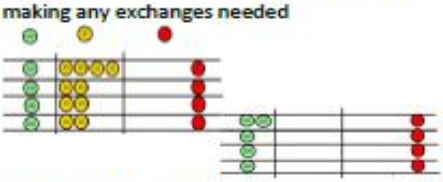
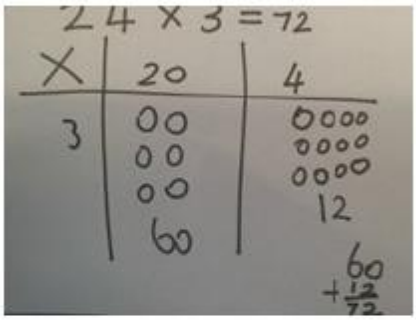
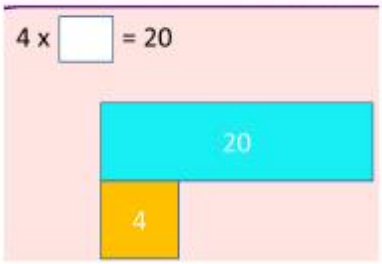
Year 1 – Count in multiples of 2's, 5's and 10's.

Concrete	Pictorial	Abstract
Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling  Count the groups as children are skip counting, children may use their fingers as they are skip counting.   Use different objects to add equal groups	Draw pictures to show how to double numbers  Children make representations to show 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

Year 2-
Show that multiplication of two numbers can be done in any order.(commutative)
Calculate and write multiplication statements for x2, x5, and x10 using the multiplication and equals signs.

Concrete	Pictorial	Abstract
Children will develop their understanding of multiplication and use jottings to support calculation: _ **Repeated addition** 3 times 5 is 5 + 5 + 5 = 15 or 3 lots of 5 or 5 x 3 Repeated addition can be shown easily on a bead string. 5 x 3 = 5 + 5 + 5  Create arrays using counters and cubes and Numicon.    Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer.  	5 x 3 = 5 + 5 + 5  Use representations of arrays to show different calculations and explore commutativity.  	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

Year 3 - Write and calculate mathematical statements for multiplication and division using known multiplication facts, including 2 digit numbers times 1 digit.

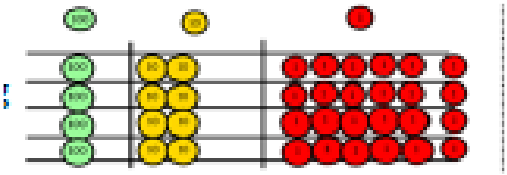
Concrete	Pictorial	Abstract
Show the links with arrays to first introduce the grid method  4 rows of 10 4 rows of 3 Move onto base ten to move towards a more compact method.  4 rows of 13 Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 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 their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.  Bar model are used to explore missing numbers  	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. **×** | **30** | **5** **7** | **210** | **35** **210 + 35 = 245** Moving forward, multiply by a 2 digit numbe showing the different rows within the grid method. 10 | 8 10 | 100 | 80 3 | 30 | 24

Year 4 - Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written method.

Concrete

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

4 x 126 =

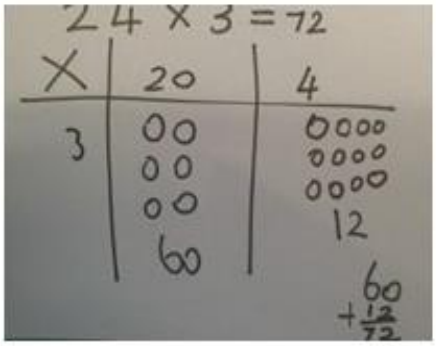


Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642

Pictorial

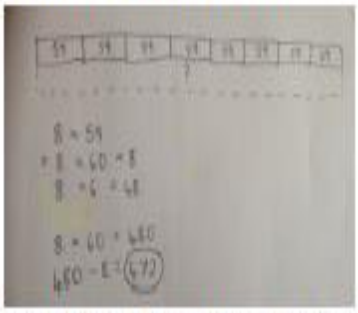
Children can represent their work with place value counters in a way that they understand.

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



x	300	20	7
4	1200	80	28

The grid method my be used to show how this relates to a formal written method.



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

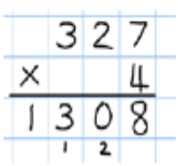
Abstract

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

x	30	5
7	210	35

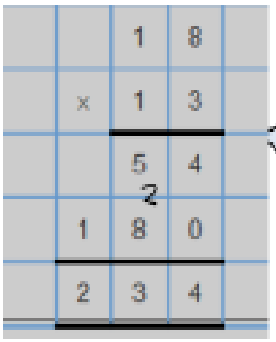
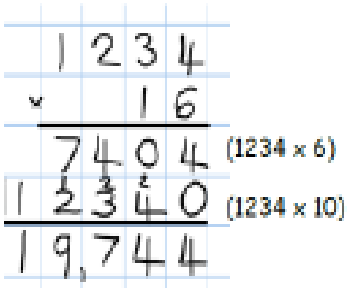
210 + 35 = 245

327
x 4
28
80
1200
1308



This may lead to a compact method.

Year 5 - Multiply numbers up to 4 digits by a 1 digit and 2 digit number using an efficient written method (including long x)

Concrete	Pictorial	Abstract
Once the children are confident at multiplying a 2-digit and 3-digit numbers by a 1-digit number and have been given the precious concrete and pictorial experiences most children will not need the concrete and pictorial approach.		 18 x 3 on the first row (8 x 3 =24, carrying the 2 for 20, then 1 x 3) 18 x 10 on the 2nd row. Show multiplying by 10 by putting zero in units first 

Year 6 - Use written multiplication methods in cases where the answer has up to 2 decimal places.

Concrete	Pictorial	Abstract
Once the children are confident at multiplying a 2-digit and 3-digit numbers by a 1-digit number and have been given the precious concrete and pictorial experiences most children will not need the concrete and pictorial approach.