

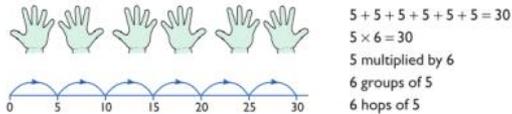
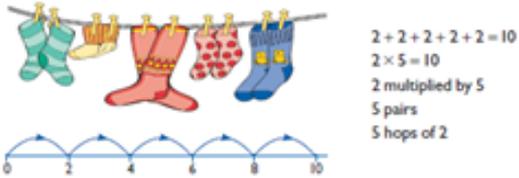
# Calculation Policy

## Multiplication

# Year 1

Understand multiplication is related to doubling and combining groups of the same size (repeated addition)

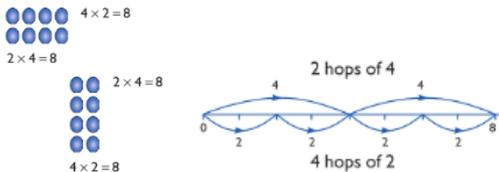
Washing line, and other practical resources for counting. Concrete objects. Numicon; bundles of straws, bead strings



Problem solving with concrete objects (including money and measures)

Use cuisenaire and bar method to develop the vocabulary relating to 'times' – Pick up five, 4 times

Use arrays to understand multiplication can be done in any order (commutative)



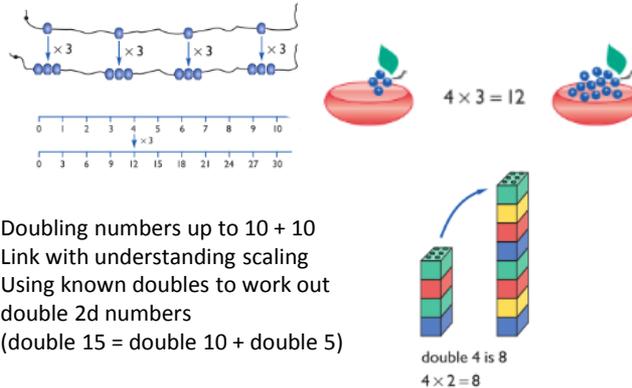
# Year 2

Expressing multiplication as a number sentence using x  
Using understanding of the inverse and practical resources to solve missing number problems.

$7 \times 2 = \square$        $\square = 2 \times 7$   
 $7 \times \square = 14$        $14 = \square \times 7$   
 $\square \times 2 = 14$        $14 = 2 \times \square$   
 $\square \times \bigcirc = 14$        $14 = \square \times \bigcirc$

Develop understanding of multiplication using array and number lines (see Year 1). Include multiplications not in the 2, 5 or 10 times tables.

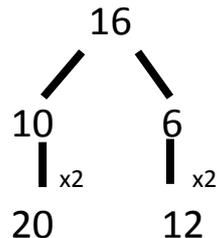
Begin to develop understanding of multiplication as scaling (3 times bigger/taller)



Doubling numbers up to 10 + 10  
Link with understanding scaling  
Using known doubles to work out double 2d numbers  
(double 15 = double 10 + double 5)

### Towards written methods

Use jottings to develop an understanding of doubling two digit numbers.



# Year 3

Missing number problems  
Continue with a range of equations as in Year 2 but with appropriate numbers.

### Mental methods

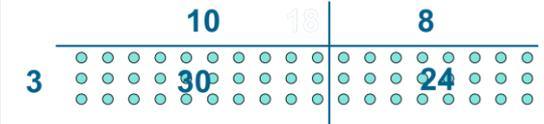
Doubling 2 digit numbers using partitioning

Demonstrating multiplication on a number line – jumping in larger groups of amounts

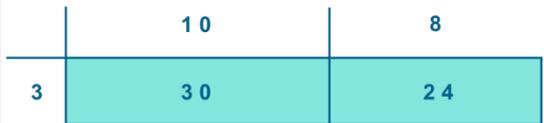
$13 \times 4 = 10 \text{ groups } 4 + 3 \text{ groups of } 4$

### Written methods (progressing to 2d x 1d)

Developing written methods using understanding of visual images



Develop onto the grid method



Give children opportunities for children to explore this and deepen understanding using Dienes apparatus and place value counters



