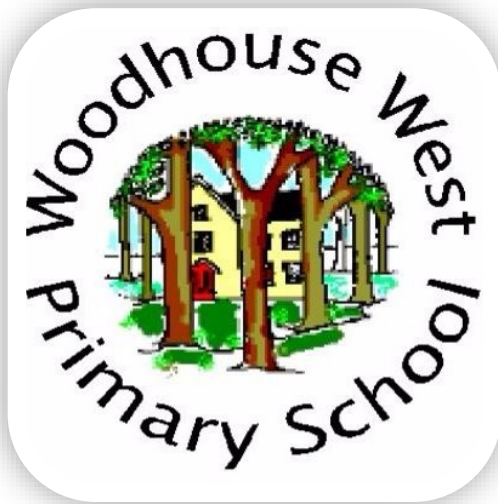
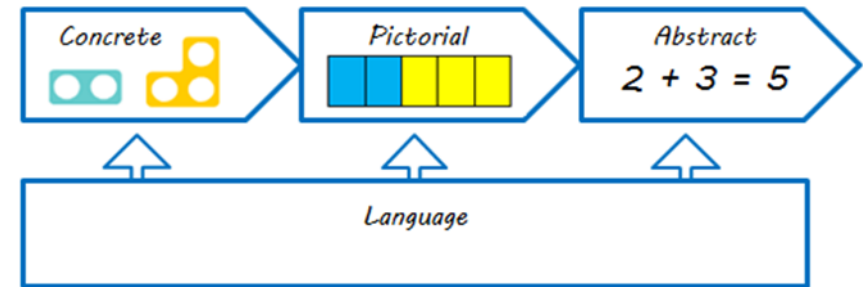




Using concrete manipulatives and pictorial models will be used throughout the school, to reinforce links with previous learning whilst maintaining a secure understanding before building towards pupils applying their understanding to a range of problems and open ended investigations.

As with all areas of Maths, accurate use of precise mathematical vocabulary will be at the centre of our children's learning.



Woodhouse West Primary School

Maths Guide

# Multiplication

Some of the methods you should expect to see in Y1 to Y6

## Key Vocabulary

Multiply  
Multiplication  
Multiple  
Repeated addition  
Factor  
Product  
Integer  
Prime number  
Square number  
Cube number  
Composite number

Avoid:  
equals, times by, timesing

## Year One



### Practical multiplication

Use real objects to demonstrate arrays and link to counting in groups

$$2 \times 3 = 6$$



### Repeated addition

Adding groups of counters to understand number facts.



### Skip Counting in 2s, 5s and 10s

Count in twos, fives and tens, forwards and backwards.

Year Two

## Arrays

Link prior understanding of arrays to Numicon shapes.

$2 \times 3 = 6$

Prior understanding links to greater values.



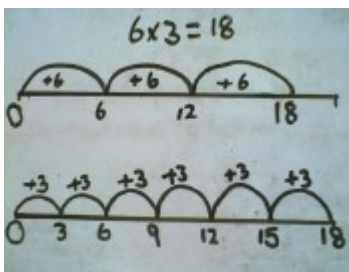
$3 \times 6 = 18$

Both as an array and multiples of Numicon shapes



## Number lines

Using Cuisinaire 3 x 6 still equals 18!



This links to filling in blank number lines.

## Multiplication tables

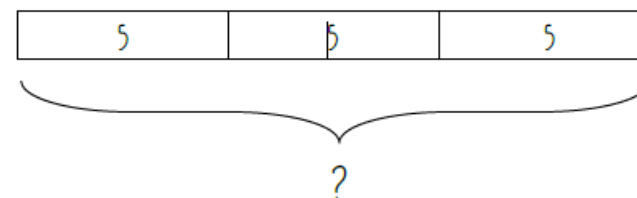
### Relate tables knowledge to doubling and halving

Year Two

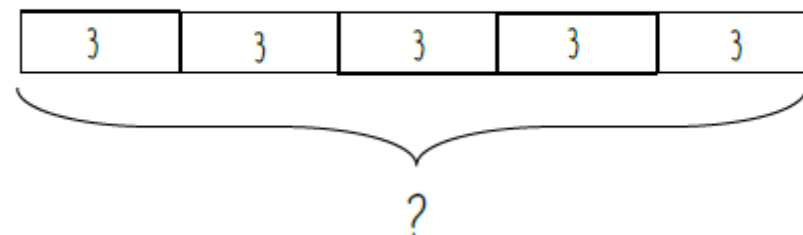
## Bar Modelling

Children are introduced to multiplication calculations being represented by bar models. This should be introduced using a mixture of concrete manipulatives, Cuisenaire rods, and pictorial representations.

$3 \times 5 = ?$

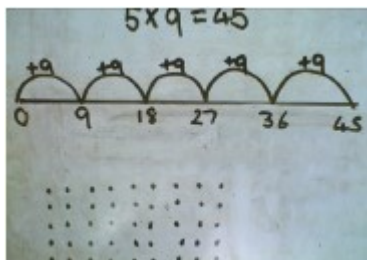


$$5 \times 3 = ?$$

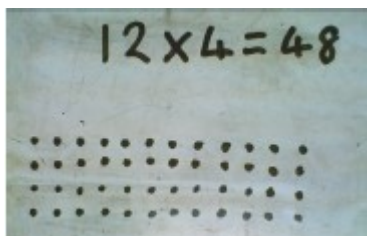


### Lower Key Stage Two

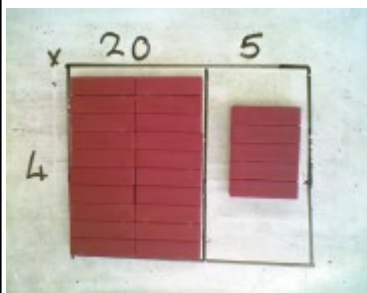
Number lines and arrays build on previous learning, helping with the transition to more formal recording. Bar modelling methods and other pictorial representations support deeper mathematical understanding throughout LKS2.



One digit by one digit, both as an array and a number line.



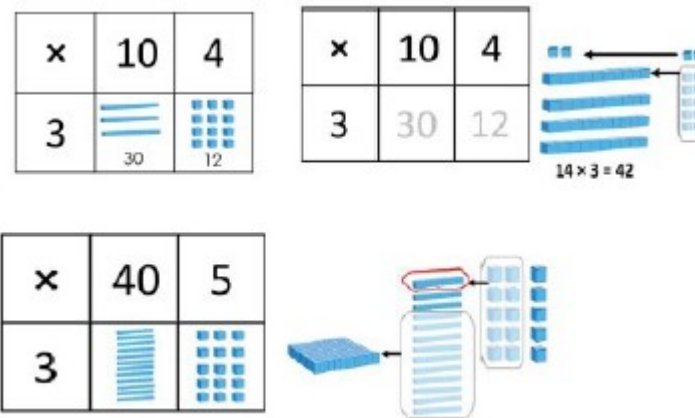
Two digits by one digit as an array



Reinforce through use of a grid. This is not a particularly quick calculation method, but is a useful model for understanding more formal methods

### Lower Key Stage Two

Use of grids to demonstrate multiplication may be of use. It is not a quick or efficient method, however it can be beneficial in helping children to conceptualise multiplication of larger numbers.



Using concrete manipulatives and later moving to using images that represent them, supports pupils' early understanding, leading towards formal written methods in Year 4. this is a mental strategy, which they may choose to support with informal jottings, including a full grid, as exemplified here.

### Lower Key Stage Two

Children should be moved onto short multiplication as soon as possible.

$$\begin{array}{r} 146 \\ \times 7 \\ \hline 1022 \\ \hline \end{array}$$

1 3 4

### Multiplication tables

3, 4 and 8 times tables modelled using arrays and doubling known facts with emphasis on rapid recall.

6, 12, 9, 11 and 7 follow through arrays, rhyme and song.

### Upper Key Stage Two

Short multiplication will be consolidated alongside the use of visual apparatus to support understanding.

$$\begin{array}{r} 6346 \\ \times 8 \\ \hline 50768 \\ \hline \end{array}$$

Larger values

$$\begin{array}{r} 4.92 \\ \times 3 \\ \hline 14.76 \\ \hline \end{array}$$

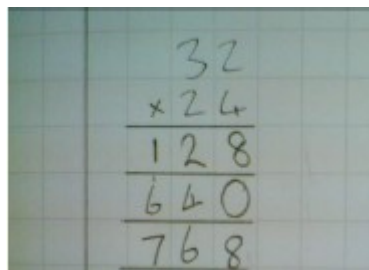
Decimals, with an emphasis on money.

Once these techniques have been mastered children will apply their understanding in a range of problem solving contexts, including mastery questions with promote higher order thinking skills.

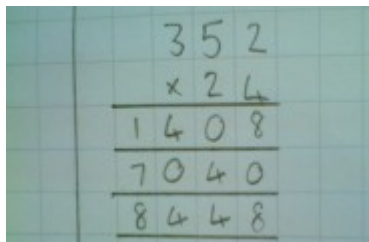
### Upper Key Stage Two

When children have mastered short multiplication, they should move onto long multiplication methods. Once again, visual images and concrete apparatus should be used to support understanding as required.

Formal long multiplication method


$$\begin{array}{r} 32 \\ \times 24 \\ \hline 128 \\ 640 \\ \hline 768 \end{array}$$

Moving onto greater values


$$\begin{array}{r} 352 \\ \times 24 \\ \hline 1408 \\ 7040 \\ \hline 8448 \end{array}$$

Once these techniques have been mastered children will apply their understanding in a range of problem solving contexts, including mastery questions with promote higher order thinking skills.

### **Multiplication tables**

Work on all tables must continue throughout, regularly, to support understanding of these methods.