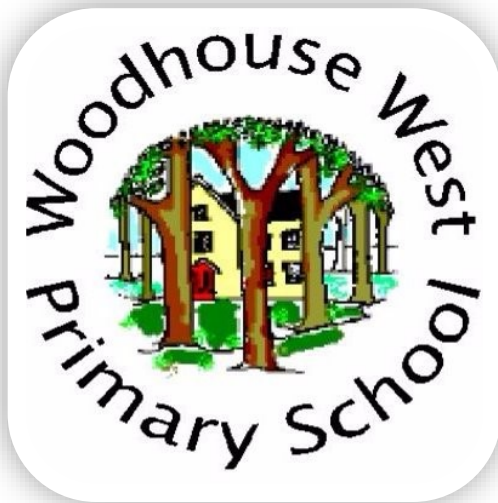
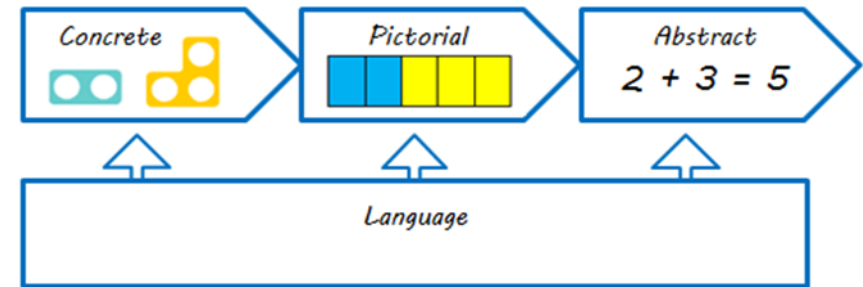




Using concrete manipulatives and pictorial models will be used throughout the school, to reinforce links with previous learning whilst maintaining a secure understanding before building towards pupils applying their understanding to a range of problems and open ended investigations.

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

# Division

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

## Key Vocabulary

Divide  
Share  
Divide equally  
Division  
Dividend  
Divisor  
Quotient  
Divisible by  
Integer  
Remainders  
Fractions  
decimals  
  
Is equal to  
Inverse  
Groups of

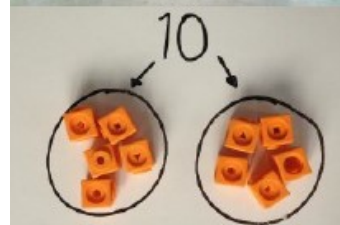
Avoid: equals, times by, timesing

## Year One

### Practical division

Sharing

E.g. Two friends share six sweets, how many does each get?



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



### Grouping counters

All these methods can be used to show that:

$$6 \div 2 = 3$$

$$6 \div 3 = 2$$



## Year Two



### Arrays

Link prior understanding of arrays to Numicon shapes.

$$6 \div 3 = 2$$



Prior understanding links to greater values.

$$18 \div 6 = 3$$



Both as an array and multiples of Numicon shapes

### Repeated subtraction

Using counting beads.

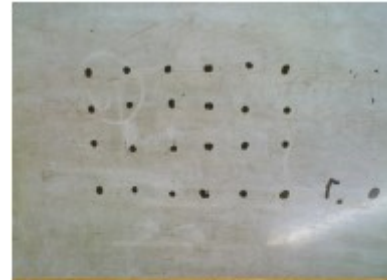
$$15 \div 3 = 5$$

### Multiplication tables

Relate tables knowledge by counting back. How many twos in twenty?

## 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.



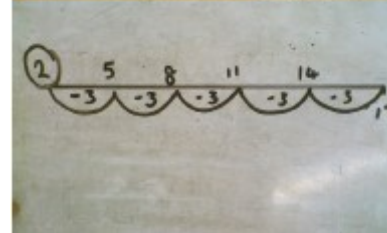
Two digits by one digit as an array

$$24 \div 4 = 6 \text{ R. } 1$$



Cuisinaire can support the next step.

$$17 \div 3 = 5 \text{ R. } 2$$



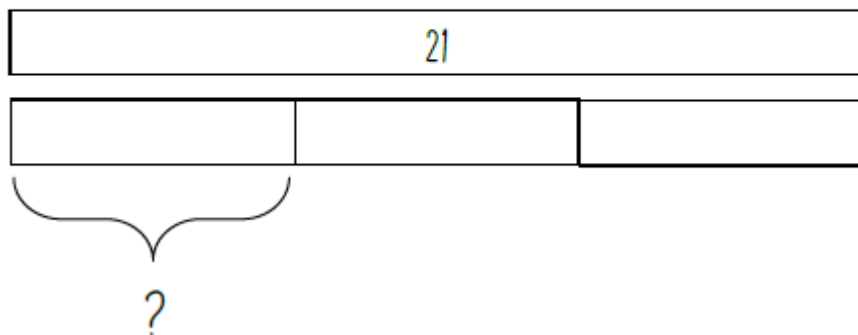
Counting back on a blank number line.

### Lower Key Stage Two

#### Bar Modelling

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

$$21 \div 3 = ?$$



### Lower Key Stage Two

Number lines and arrays should be used until children are confident with the concept. Only then should they be introduced to short division.

A photograph of a short division calculation on grid paper. The calculation is  $3 \overline{)45}$ . The quotient '15' is written above the line, with '1' above the '4' and '5' above the '5'. The result is 15.

Two digits by one digit

A photograph of a short division calculation on grid paper. The calculation is  $5 \overline{)148}$ . The quotient '29' is written above the line, with '2' above the '1' and '9' above the '4'. A remainder of '2' is indicated by a small 'r' and the number '2' to the right of the line. The result is 29 with a remainder of 2.

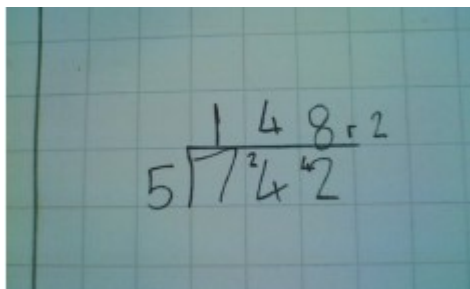
Three digits by one digit with remainders.

#### Multiplication tables

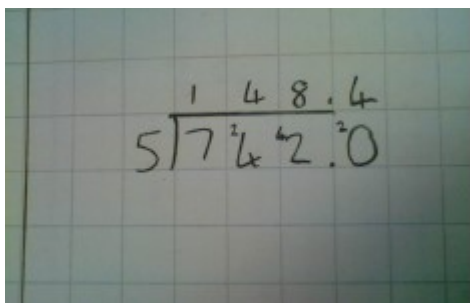
Tables facts need constant practice to enable success in these methods.

### Upper Key Stage Two

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


$$\begin{array}{r} 148 \text{ r } 2 \\ 5 \overline{) 148} \end{array}$$

Expressing remainders as fractions.

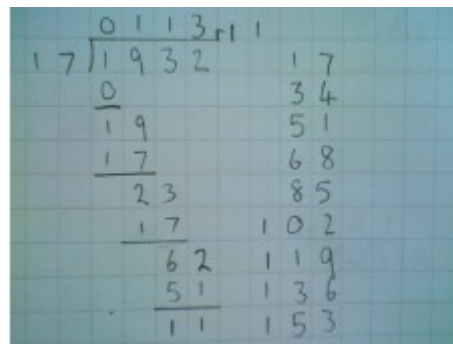

$$\begin{array}{r} 148.4 \\ 5 \overline{) 148.20} \end{array}$$

Expressing remainders as decimals.

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.

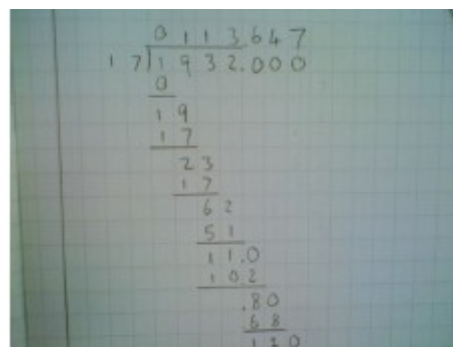
### Upper Key Stage Two

When children have mastered short division, they should move onto long division methods.


$$\begin{array}{r} 0113 \text{ r } 21 \\ 17 \overline{) 1932} \\ \underline{0} \phantom{00} \\ 19 \phantom{00} \\ \underline{17} \phantom{00} \\ 23 \phantom{00} \\ \underline{17} \phantom{00} \\ 62 \phantom{00} \\ \underline{51} \phantom{00} \\ 11 \phantom{00} \end{array}$$

#### **Formal long division.**

Copy out the multiples of the divisor first, to help prevent mistakes.


$$\begin{array}{r} 0113.647 \\ 17 \overline{) 1932.000} \\ \underline{0} \phantom{000} \\ 19 \phantom{000} \\ \underline{17} \phantom{000} \\ 23 \phantom{000} \\ \underline{17} \phantom{000} \\ 62 \phantom{000} \\ \underline{51} \phantom{000} \\ 11.0 \phantom{00} \\ \underline{102} \phantom{00} \\ .80 \phantom{00} \\ \underline{68} \phantom{00} \\ .120 \phantom{00} \end{array}$$

Once again, remainders can be expressed as fractions or decimals.

#### **Multiplication tables**

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