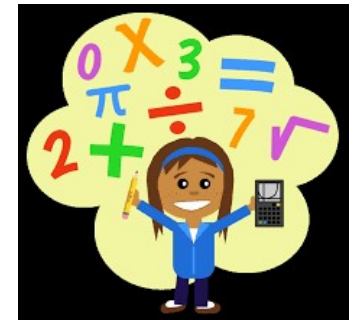




St. John Bosco

Calculation Strategies

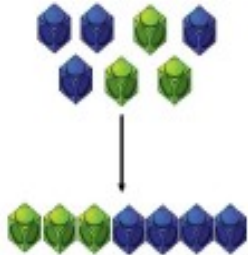
The Four Operations



Year One Addition

Concrete

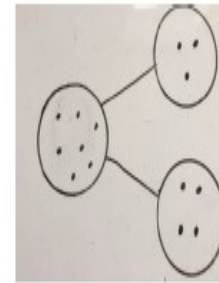
Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).



In Autumn Term pupils use concrete resources to explore addition of single digits.

Pictorial

Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.

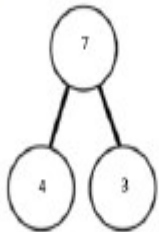


In Autumn Term pupils progress to use pictorial representations in order to represent their concrete resources. The use of pictures and drawings are used to explore addition.

Abstract

$$4 + 3 = 7$$

Four is a part, 3 is a part and the whole is seven.



In Autumn Term pupils use their concrete and pictorial experiences to record addition number sentences. The pupils are taught to use a part whole model in order to add accurately.

Year One Addition

Concrete

Counting on using number lines using cubes or Numicon.



In Spring and Summer Term pupils begin to use a number line for addition. They use cubes, counters and other concrete resources to explore the addition physically before applying their understanding in order to use the number line.

Abstract

Children to develop an understanding of equality e.g.

$$6 + \square = 11$$

$$6 + 5 = 5 + \square$$

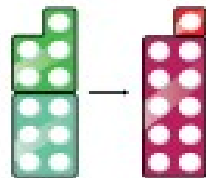
$$6 + 5 = \square + 4$$

In summer term pupils use their experiences of addition with concrete and pictorial resources to record addition number sentences accurately. They apply the taught methods to tackle abstract problems including missing numbers.

Concrete and Pictorial

Regrouping to make 10; using ten frames and counters/cubes or using Numicon.

$$6 + 5$$

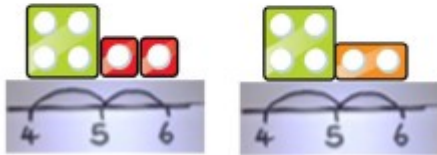


In Spring and Summer Term pupils use Numicon to explore single digit additions. Pupils are introduced to ten frames to support their recording. This supports the pupils in recording number sentences,

Year Two Addition Revision

Concrete

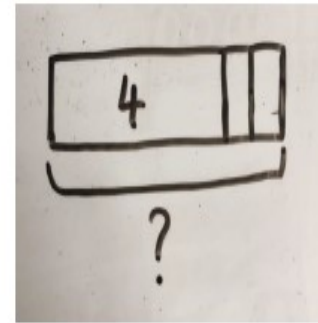
Counting on using number lines using cubes or Numicon.



In autumn term pupils in Year Two recap on the use of a number line to add. They use concrete resources to physically add one and two digit numbers.

Pictorial

A bar model which encourages the children to count on, rather than count all.



Pupils move on from the use of concrete resource to represent addition calculations using pictorial representations. They are introduced to bar models as a means of representing the quantities in an addition calculation.

Abstract

The abstract number line:

What is 2 more than 4?

What is the sum of 2 and 4?

What is the total of 4 and 2?

$4 + 2$



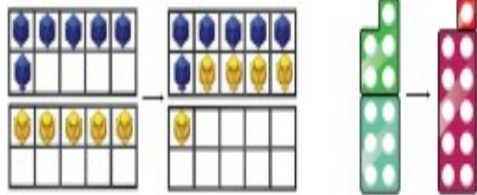
Pupils use their recap of the concrete and pictorial approaches used in Year One to confidently use a number line to add single digits.

Year Two Addition

Concrete

Regrouping to make 10; using ten frames and counters/cubes or using Numicon.

$6 + 5$

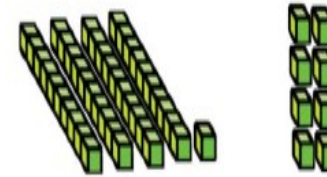


In autumn term pupils recap on addition using the Numicon and tens frames used in Year One. The pupils begin to link their place value understanding to physically add one and two digit numbers.

Concrete

TO + O using base 10. Continue to develop understanding of partitioning and place value.

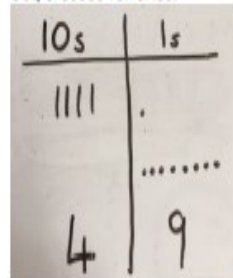
$41 + 8$



Pupils move on from the use of the tens frame to base ten in order to apply their place value to add two digit and a single digit number.

Pictorial

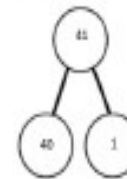
Children to represent the base 10 e.g. lines for tens and dot/crosses for ones.



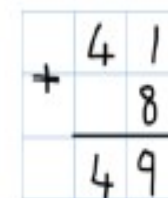
Pupils use their experiences of the concrete resources to move on and represent their additions using place value models.

Abstract

$41 + 8$



$1 + 8 = 9$
 $40 + 9 = 49$

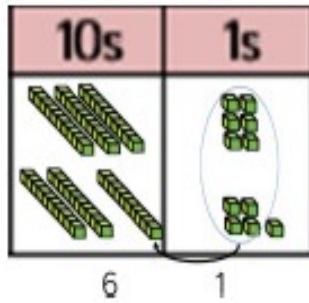


In autumn term the pupils progress to apply their concrete and pictorial understanding to use part whole models and begin to record TO+TO calculations in columns.

Year Two Addition

Concrete

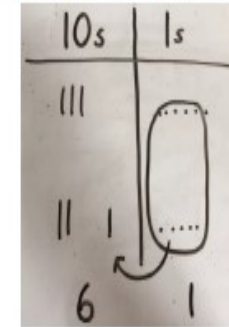
TO + TO using base 10. Continue to develop understanding of partitioning and place value.
 $36 + 25$



In autumn and spring term pupils continue to develop their understanding of partitioning and place value to add two digit numbers. The continuous use of base ten apparatus is used to embed these concepts.

Pictorial

Children to represent the base 10 in a place value chart.



In autumn and spring term pupils learn to represent the base ten in place value charts.

Abstract

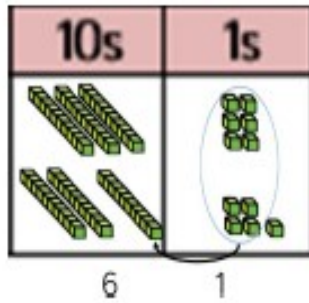
$$\begin{array}{r} \text{T} \quad \text{U} \\ 4 \quad 5 \\ 1 \quad 3 \quad + \\ \hline \quad 8 \\ 5 \quad 0 \\ \hline 5 \quad 8 \end{array}$$

By summer term pupils move on to represent their two digit addition calculations using the formal written methods of column addition. The pupils use their understanding of partitioning and place value to add using columns.

Year Three Addition Revision

Concrete

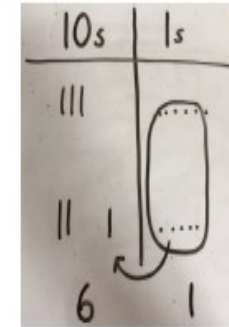
TO + TO using base 10. Continue to develop understanding of partitioning and place value.
 $36 + 25$



In autumn term pupils recap on their understanding of partitioning and place value to add two and then three digit numbers. The continuous use of base ten apparatus and place value counters is used to embed these concepts.

Pictorial

Children to represent the base 10 in a place value chart.



In autumn term pupils learn to represent the base ten in place value charts.

Abstract

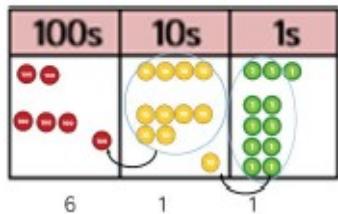
$$\begin{array}{r} 45 \\ +13 \\ \hline 50 \\ \underline{8} \\ 58 \end{array}$$

In Autumn term pupils represent their two and three digit addition calculations using the formal written methods of column addition. The pupils use their understanding of partitioning and place value to add using columns.

Year Three Addition

Concrete

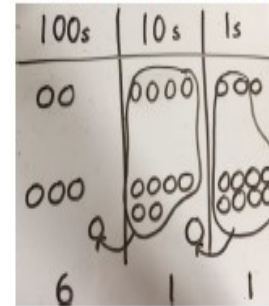
Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.



In autumn and spring term the pupils continue to use the place value counters and their knowledge of partitioning to physically add two three digit numbers. Pupils use the place value counters to develop an understanding of carrying over to the next place value column.

Pictorial

Children to represent the counters in a place value chart, circling when they make an exchange.



Pupils move on and represent their additions pictorially using place value grids. Pupils continue to focus on showing carrying over to the next place value column.

Abstract

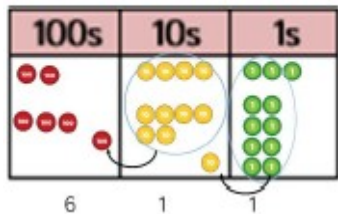
$$\begin{array}{r} 625 \\ +48 \\ \hline 13 \\ 60 \\ \hline 600 \\ \hline 673 \end{array}$$

In autumn and spring term pupils represent their two and three digit addition calculations using the formal written methods of column addition. The pupils use their understanding of partitioning and place value to add using columns. In the summer term pupils will move to wards the addition of three digit numbers with the introduction of carrying in preparation for Year Four.

Year Four Addition Revision

Concrete

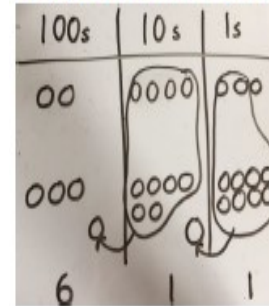
Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.



In autumn term the pupils revisit the use of place value counters and their knowledge of partitioning to physically add three and four digit numbers. Pupils use the place value counters to revise their understanding of carrying over to the next place value column.

Pictorial

Children to represent the counters in a place value chart, circling when they make an exchange.



Pupils move on and represent their additions pictorially using place value grids. Pupils continue to focus on showing carrying over to the next place value column.

Abstract

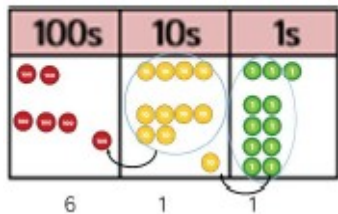
$$\begin{array}{r} 625 \\ +48 \\ \hline 13 \\ 60 \\ \hline 600 \\ \hline 673 \end{array}$$

In autumn term pupils represent their two and three digit addition calculations using the formal written methods of column addition. The pupils use their understanding of partitioning and place value to add using columns.

Year Four Addition

Concrete

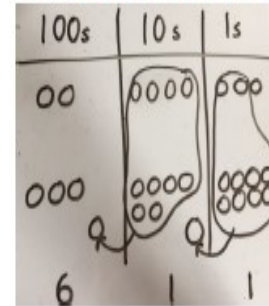
Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.



In autumn and spring term the pupils continue to use of place value counters and their knowledge of partitioning to physically add three and four digit numbers. Pupils use the place value counters to consolidate their understanding of carrying over to the next place value column.

Pictorial

Children to represent the counters in a place value chart, circling when they make an exchange.



In autumn and spring pupils continue to use pictorial place value grids and part whole models to represent their additions.

Abstract

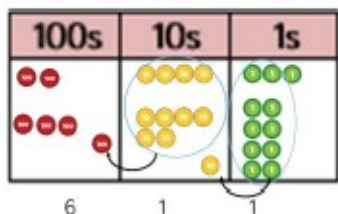
$$\begin{array}{r} \\ 587 \\ +475 \\ \hline 1062 \end{array}$$

By the end of Year Four pupils will have an embedded understanding of the compact method for column addition and will carry to the next place value column using this method. Pupils will be able to complete four digit additions and begin to use this method to add decimal numbers.

Year Five and Six Addition

Concrete

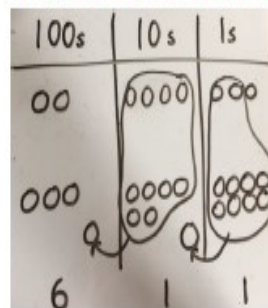
Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.



In Years Five and Six pupils will continue to have access to concrete resources including base ten and place value counters. Concrete resources are used at this stage to support the addition of numbers with more than four digits.

Pictorial

Children to represent the counters in a place value chart, circling when they make an exchange.



In Years Five and Six pupils continue to make use of pictorial representations when adding larger numbers.

Abstract

$$\begin{array}{r} 587 \\ +475 \\ \hline 1062 \end{array}$$

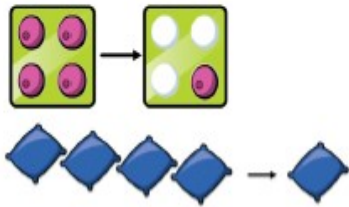
In Years Five and Six pupils will have an embedded understanding of the compact method for column addition and will carry to the next place value column using this method. Pupils use this method to add large numbers efficiently and add decimal numbers accurately. Addition within these year groups will also include applying column addition to add larger numbers and decimal numbers.

Year One Subtraction

Concrete

Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).

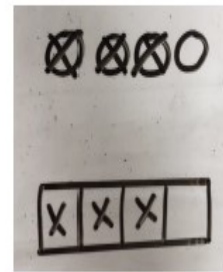
$$4 - 3 = 1$$



In autumn term in Year One children use concrete objects to physically take away single digits. They explore how subtraction makes a quantity smaller through the use of concrete resources. This includes the process of counting backwards to subtract and recognizing that the numbers decrease.

Pictorial

Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.

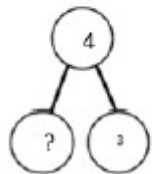
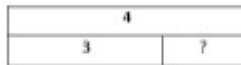


Pupils move on to record their concrete resources in picture form. Children use a variety of pictorial representations to consolidate subtracting.

Abstract

$$4 - 3 =$$

$$\square = 4 - 3$$



In Autumn Term pupils use their concrete and pictorial experiences to record subtraction number sentences. The pupils are taught to use a part whole model in order to subtract accurately. A bar model may be introduced as the children become confident in using their place value

Year One Subtraction

Concrete

Counting back (using number lines or number tracks)
children start with 6 and count back 2.

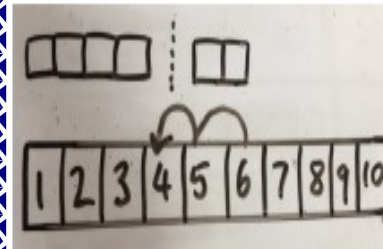
$$6 - 2 = 4$$



In Spring and Summer Term pupils begin to use a number line for subtraction. They use cubes, counters and other concrete resources to explore the addition physically before applying their understanding in order to use the number line.

Pictorial

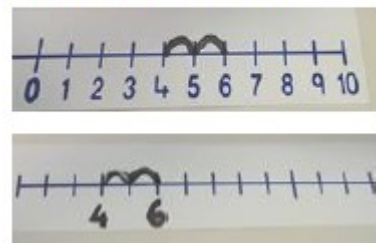
Children to represent what they see pictorially e.g.



Pupils continue to record their concrete resources in picture form. Children use a variety of pictorial representations to consolidate subtracting.

Abstract

Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line



In summer term pupils use their experiences of subtraction with concrete and pictorial resources to record subtraction number sentences accurately. They apply the taught methods to tackle abstract problems including missing numbers.

Year Two Subtraction Revision

Concrete

Counting back (using number lines or number tracks)
children start with 6 and count back 2.

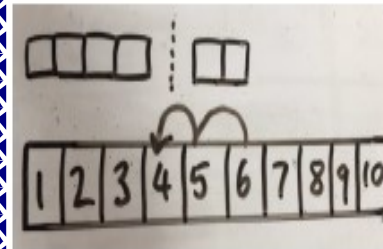
$$6 - 2 = 4$$



In autumn term pupils in Year Two recap on the use of a number line to subtract. They use concrete resources to physically add one and two digit numbers. The pupils begin with counting backwards to subtract and then move on to recognize that finding the difference can also be calculated by counting on.

Pictorial

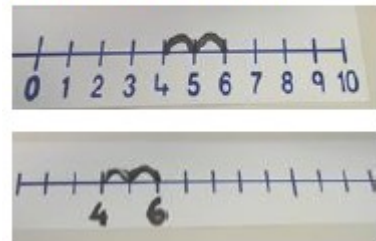
Children to represent what they see pictorially e.g.



Pupils revise recording their concrete resources in picture form. Children use a variety of pictorial representations to consolidate subtracting.

Abstract

Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line.



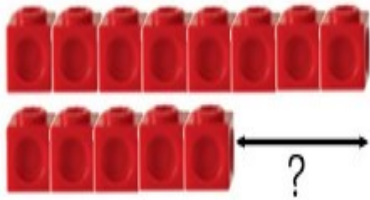
Pupils use their recap of the concrete and pictorial approaches used in Year One to confidently use a number line to subtract single digits.

Year Two Subtraction

Concrete

Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used).

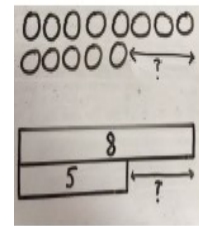
Calculate the difference between 8 and 5.



In autumn term pupils in Year Two use concrete resources to calculate the difference between single digits.

Pictorial

Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.



Pupils use their concrete experiences to represent subtraction calculations. Children use pictorial representations to look closely at finding the difference.

Abstract

Find the difference between 8 and 5.

8 - 5, the difference is

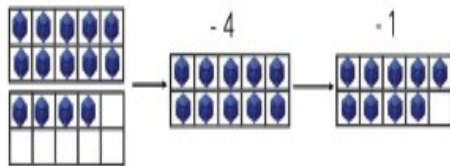
Children to explore why $9 - 6 = 8 - 5 = 7 - 4$ have the same difference.

In autumn term pupils apply their concrete and pictorial knowledge to explore a variety of simple subtraction number problems.

Year Two Subtraction

Concrete

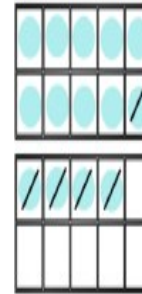
Making 10 using ten frames.
14 - 5



In autumn term pupils recap on subtraction using the Numicon and tens frames used in Year One. The pupils begin to link their place value understanding to physically subtract one and two digit numbers.

Pictorial

Children to present the ten frame pictorially and discuss what they did to make 10.



Pupils use their experiences of the concrete resources to move on and represent their subtractions using place value models.

Abstract

$$\begin{array}{r} 87 \\ -35 \\ \hline \end{array} = \begin{array}{r} 80 \quad 7 \\ -30 \quad 5 \\ \hline \end{array}$$

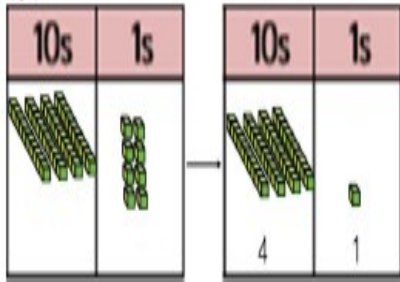
In autumn term pupils apply their concrete and pictorial knowledge to move towards using column method for subtraction. At this stage the pupils use their place value skills to partition and recombine when calculating.

Year Two Subtraction

Concrete

Column method using base 10.

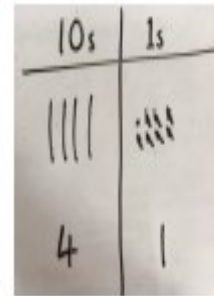
48-7



In autumn and spring term pupils use the concrete base ten resources to partition and recombine in order to subtract two and three digit numbers.

Pictorial

Children to represent the base 10 pictorially.



Pupils move on from using the concrete resources to apply place value in pictorial representations. Pupils use place value grids to subtract with accuracy.

Abstract

Column method or children could count back 7.

$$\begin{array}{r} 48 \\ - 7 \\ \hline 41 \end{array}$$

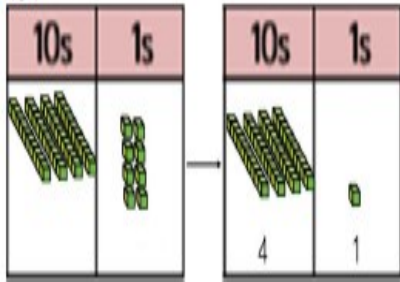
The pupils move on to record their subtractions using place value columns as a formal written method. At this stage it is essential that the children use place value headings within the method.

Year Two Subtraction

Concrete

Column method using base 10.

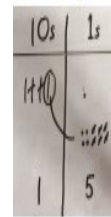
48-7



In summer term pupils develop their understanding of subtraction using exchanging. Pupils use base ten apparatus to physically exchange from the next place value column.

Pictorial

Represent the base 10 pictorially, remembering to show the exchange.



Pupils move on from using the concrete resources to apply place value in pictorial representations. Pupils use place value grids to subtract and show exchanging from the next place value column.

Abstract

Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because $41 = 30 + 11$.

$$\begin{array}{r} 3 \cancel{4} 1 \\ - 26 \\ \hline 15 \end{array}$$

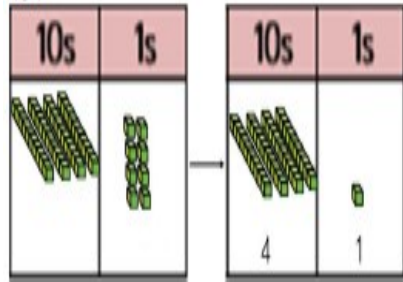
The pupils move on to record their subtractions using place value columns as a formal written method showing exchanging from the next place value column.

Year Three Subtraction Revision

Concrete

Column method using base 10.

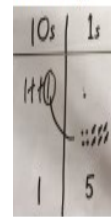
48-7



In autumn term pupils recap on their understanding of subtraction using exchanging. Pupils use base ten apparatus to physically exchange from the next place value column and apply this to two and three digit subtractions.

Pictorial

Represent the base 10 pictorially, remembering to show the exchange.



Pupils continue to use the concrete resources to apply place value in pictorial representations. Pupils use place value grids to subtract and show exchanging from the next place value column for the subtraction of two and three digit numbers.

Abstract

Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because $41 = 30 + 11$.

$$\begin{array}{r} 3 \cancel{4} 1 \\ - 26 \\ \hline 15 \end{array}$$

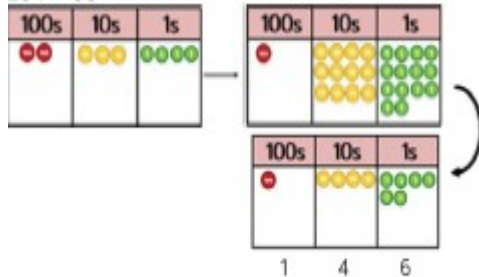
The pupils revise recording their subtractions using place value columns as a formal written method showing exchanging from the next place value column.

Year Three Subtraction

Concrete

Column method using place value counters.

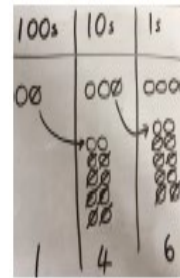
$$234 - 88$$



In spring and summer term pupils use place value counters as concrete resources in order to subtract two and three digit numbers with more than one exchange.

Pictorial

Represent the place value counters pictorially, remembering to show what has been exchanged.



Pupils use their experiences of the concrete resources to represent two and three digit subtractions, showing more than one exchange.

Abstract

Formal column method. Children must understand what has happened when they have crossed out digits.

$$\begin{array}{r} \overset{2}{2}\overset{1}{3}4 \\ - 88 \\ \hline 6 \end{array}$$

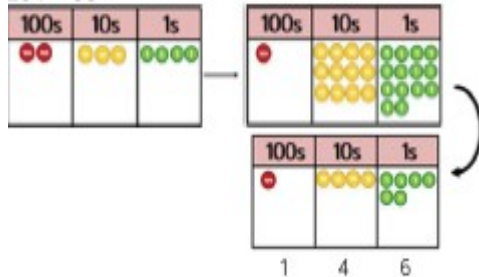
Pupils apply their place value understanding to use the formal written method of column subtraction with exchanging.

Year Four Subtraction

Concrete

Column method using place value counters.

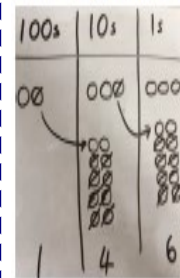
$$234 - 88$$



In Year Four pupils continue to use place value counters and base ten apparatus in order to subtract three and four digit numbers with more than one exchange.

Pictorial

Represent the place value counters pictorially, remembering to show what has been exchanged.



Pupils use their experiences of the concrete resources to represent three and four digit subtractions, showing more than one exchange.

Abstract

Formal column method. Children must understand what has happened when they have crossed out digits.

$$\begin{array}{r} \overset{2}{2}\overset{1}{3}4 \\ - 88 \\ \hline 6 \end{array}$$

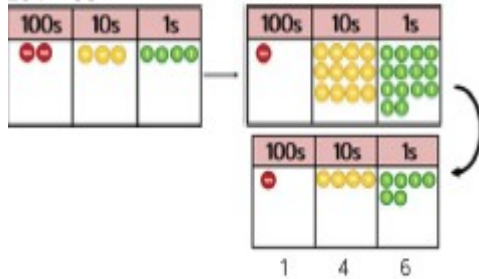
Pupils apply their place value understanding to use the formal written method of column subtraction with exchanging for three and four digit subtractions.

Year Five and Six Subtraction

Concrete

Column method using place value counters.

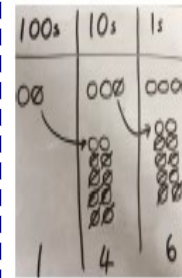
$$234 - 88$$



In Year Five and Six pupils continue to use place value counters and base ten apparatus in order to subtract larger whole numbers with more than one exchange.

Pictorial

Represent the place value counters pictorially, remembering to show what has been exchanged.



Pupils use their experiences of the concrete resources to represent larger subtractions, showing more than one exchange.

Abstract

$$932 - 457 =$$

$$\begin{array}{r} \text{H} \quad \text{T} \quad \text{U} \\ 9 \quad 3 \quad 2 \\ - 4 \quad 5 \quad 7 \\ \hline 4 \quad 7 \quad 5 \end{array}$$

Pupils apply their place value understanding to use the formal written method of column subtraction with exchanging for three and four digit subtractions.

Year One Multiplication

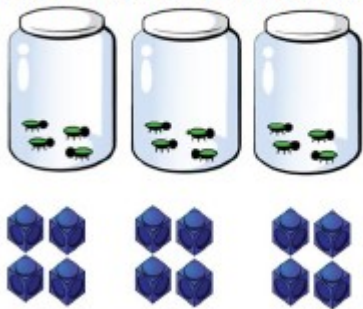
Concrete

Repeated grouping/repeated addition

$$3 \times 4$$

$$4 + 4 + 4$$

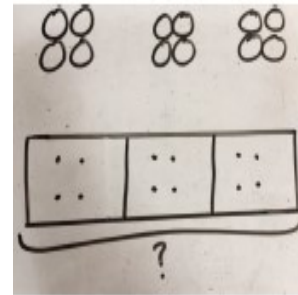
There are 3 equal groups, with 4 in each group.



In Year One pupils are encouraged to count in twos, fives and tens. In Autumn and Spring term the pupils explore the concepts of recognizing and making equal groups as well as counting in multiples using objects including; Numicon, cubes and other objects in the classroom.

Pictorial

Children to represent the practical resources in a picture and use a bar model.



Pupils use their experiences of the concrete resources to count in multiples and double numbers. When the children are ready (Spring to Summer Term) they use pictorial representations including the bar model to show equal groups.

Abstract

$$3 \times 4 = 12$$

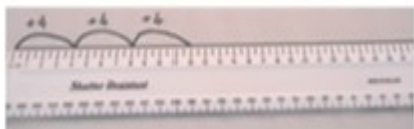
$$4 + 4 + 4 = 12$$

Pupils apply their understanding in order to record their multiplications in abstract form. In Summer term pupils are encouraged to record their calculations in this format.

Year Two Multiplication

Concrete

Number lines to show repeated groups-
 3×4

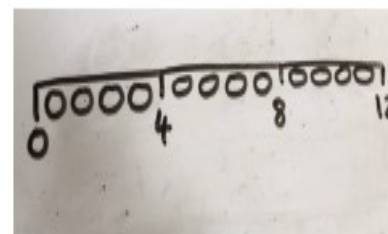


Cuisenaire rods can be used too.

In Year Two children continue to count in multiples of two, five and ten. They learn to count in multiples of three and four. In Autumn and Spring term children use concrete resources such as Numicon or Cuisenaire rods, alongside number lines to show repeated groups.

Pictorial

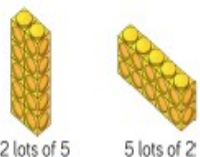
Represent this pictorially alongside a number line e.g:



Pupils use their experiences of the concrete resources to count in multiples and double numbers. In Autumn and Spring term they use pictorial representations to show repeated groups.

Concrete

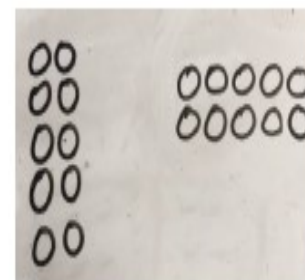
Use arrays to illustrate commutativity counters and other objects can also be used.
 $2 \times 5 = 5 \times 2$



In Spring term pupils use concrete resources to form arrays and to illustrate commutativity. A variety of concrete resources including counters and cubes are used to show arrays.

Pictorial

Children to represent the arrays pictorially.



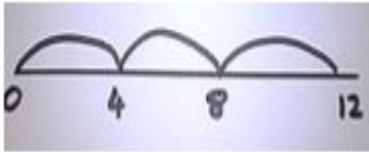
Pupils use their experiences of the concrete resources to count in multiples and use pictorial representations to represent arrays.

Year Two Multiplication

Abstract

Abstract number line showing three jumps of four.

$$3 \times 4 = 12$$



In Year Two children use their experiences of concrete and pictorial representations of multiplication to record calculations using abstract number lines to show jumps.

Abstract

$$10 = 2 \times 5$$

$$5 \times 2 = 10$$

$$2 + 2 + 2 + 2 + 2 = 10$$

$$10 = 5 + 5$$

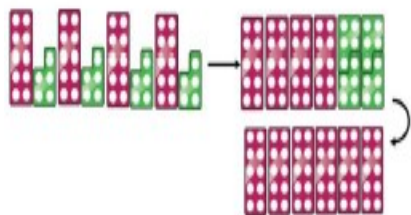
Pupils apply their experiences of arrays, using the concrete resources and pictorial representations in Spring and Summer term in order to write a range of calculations.

Year Three Multiplication

Concrete

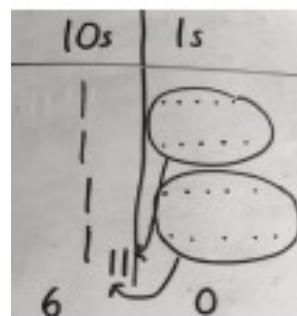
Partition to multiply using Numicon, base 10 or Cuisenaire rods.

$$4 \times 15$$



In Year Three pupils use a variety of concrete resources including, Numicon, base 10 and Cuisenaire rods to multiply. In Autumn and Spring term, pupils apply their place value skills to partition in order to multiply effectively.

Pictorial



Pupils use their experiences of the concrete resources to represent their partitioned multiplication calculations pictorially. The application of place value is used alongside known facts to support understanding.

Abstract

$$\begin{array}{r} 4 \times 15 \\ \swarrow \searrow \\ 10 \quad 5 \end{array}$$

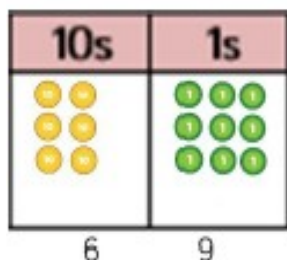
$$\begin{array}{l} 10 \times 4 = 40 \\ 5 \times 4 = 20 \\ 40 + 20 = 60 \end{array}$$

Pupils then apply their concrete and pictorial experiences and are encouraged to show the steps that they have taken in number sentences.

At this point a number line (as in Year Two) may also be used to support learners not working at expected level within the curriculum.

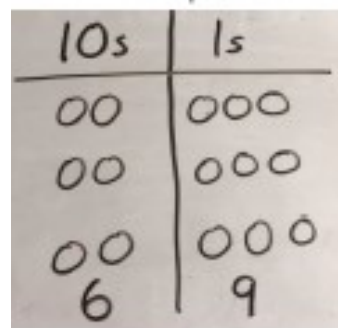
Year Three Multiplication

Concrete



In Autumn and Spring term pupils move on and begin to use concrete resources such as place value counters to explore a formal column method for multiplication. Base 10 is also used at this stage.

Pictorial



Pupils use their experiences of the concrete resources to represent their multiplications pictorially in Autumn term.

Abstract

$$\begin{array}{r} 3 \times 23 \\ \hline 20 \quad 3 \\ \hline 23 \\ \times 3 \\ \hline 69 \end{array}$$

$3 \times 20 = 60$
 $3 \times 3 = 9$
 $60 + 9 = 69$

In Spring and Summer term Year Three pupils record what they are doing showing an understanding of how partitioning and recombining relates to multiplying in columns.

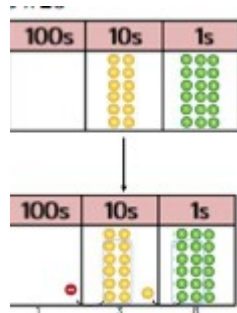
Abstract

$$\begin{array}{r} \text{HT U} \\ 23 \\ \times 7 \\ \hline 161 \end{array}$$

In Spring and Summer term the pupils move on to multiply 2-digits by a single digit and 3-digits by a single digit using the long method for multiplication. The children apply place value headings and known facts to carry out the method.

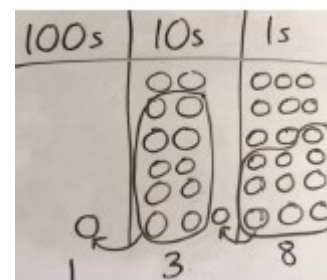
Year Four Multiplication

Concrete



In Autumn and Spring term pupils use place value counters alongside base 10 resources to support their use of the long column method for multiplication.

Pictorial



Pupils use their experiences of the concrete resources to represent their multiplications pictorially in Autumn term. This includes carrying to the next place value column which prepares the children to use the short method for column multiplication.

Abstract

$$\begin{array}{r}
 \text{H T U} \\
 23 \\
 \times 7 \\
 \hline
 21 \\
 140 \\
 \hline
 161
 \end{array}$$

In Spring and Summer term the pupils revise the Year 3 method and multiply 2-digits by a single digit and 3-digits by a single digit using the long method for multiplication. The children apply place value headings and known facts to carry out the method.

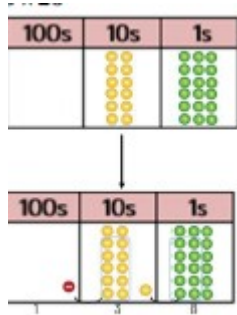
Abstract

$$\begin{array}{r}
 \text{H T U} \\
 23 \\
 \times 7 \\
 \hline
 161
 \end{array}$$

In Spring and Summer term the pupils move on to multiply 2-digits by a single digit and 3-digits by a single digit using the short method for multiplication. The children apply place value headings and known facts to carry out the method.

Year Five and Year Six Multiplication

Concrete



In Autumn term in Year Five pupils revise the use of place value to multiply 4 digit numbers by a single digit using the short multiplication method alongside the use of concrete resources if necessary.

Abstract

$$\begin{array}{r} 72 \\ \times 38 \\ \hline 2160 \\ 576 \\ \hline 2736 \\ 1 \end{array}$$

Year Five pupils continue to use the short column method for multiplication. They apply place value to multiply two and three digit numbers by 2 digits.

Abstract

$$\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ 11 \end{array}$$

Answer: 3224

In Year Six pupils use the abstract methods for multiplication to times multi-digits (up to 4 digits) by a 2 digit number.

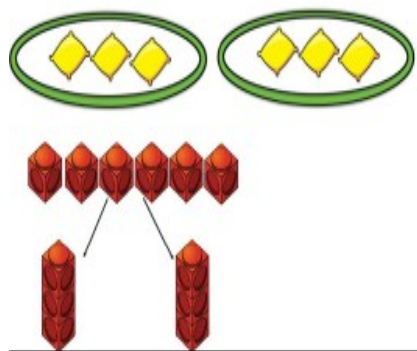
Abstract

$$\begin{array}{r} T U . th \\ 2 . 3 \\ \times 7 X \\ \hline 2 \\ 16 . 1 \end{array}$$

In Year Five and Six pupils apply their understanding of the column methods for multiplication to multiply numbers with decimals.

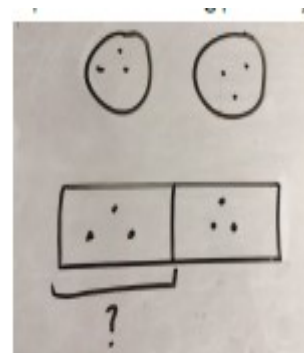
Year One Division

Concrete



In Autumn and Spring term Year One pupils explore division by sharing objects into groups. Pupils use concrete resources to share their objects into groups using a ring to show how many in each group.

Pictorial



In Spring and Summer term the pupils pictorially.

Abstract

$$6 \div 2 = 3$$



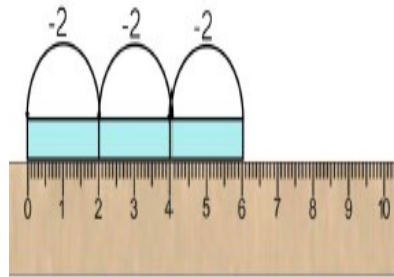
Children should also be encouraged to use their 2 times tables facts.

In Summer term Year One pupils use their pictorial representations to represent their division calculations in a number sentence.

They then use these concepts to begin problem solving. For example, I have 12 sweets and put them into groups of 3, how many groups?

Year Two Division

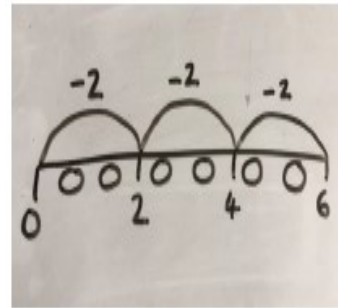
Concrete



3 groups of 2

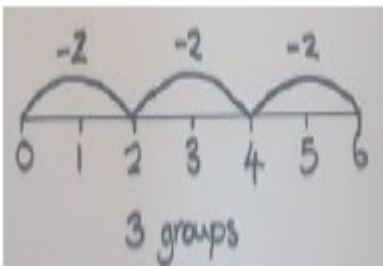
In Autumn term Year Two pupils build upon their experience of sharing into groups and revisit the concrete and pictorial models used in Year One. Pupils then move on to use Cuisenaire rods above a ruler to use repeated subtraction to divide.

Pictorial



In Spring and Summer term the pupils build upon their understanding from the use of concrete resources to represent division using repeated subtraction on a number line in pictorial form.

Abstract



In Spring and Summer term pupils use an abstract number line to represent the equal groups that have been subtracted.

Year Three Division

Concrete

2d + 1d with remainders using lollipop sticks. Cuisenaire rods, above a ruler can also be used.

$$13 \div 4$$

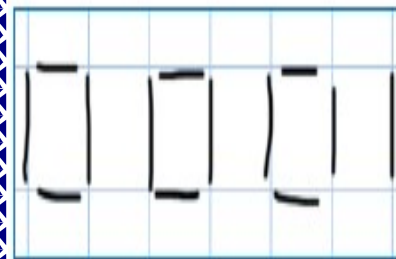
Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.



There are 3 whole squares, with 1 left over.

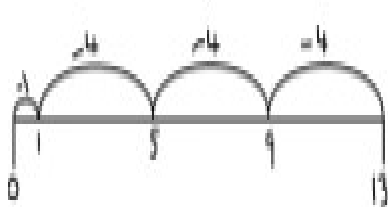
In Autumn and Spring term Year Three build upon their knowledge of division from Year Two and use concrete resources including lollipop sticks and Cuisenaire rods above a ruler to divide a two digit number by a single digit and explore remainders.

Pictorial



In Autumn and Spring term Year Three pupils use their experience of division with concrete resources to represent division with remainders pictorially. For example, there are three whole squares with one left over.

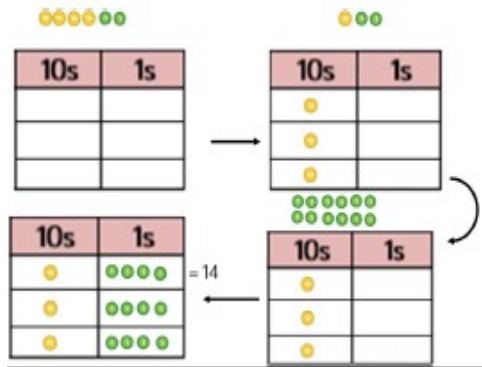
Abstract



In Autumn and Spring term the pupils then move on and use a number line to represent their division calculation. At this point the children are encouraged to use their times table facts. Pupils may also represent repeated addition on a number line to show the division of the two digit

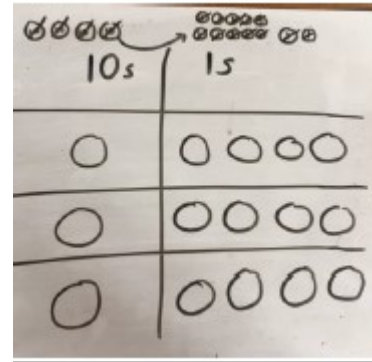
Year Three Division

Concrete



In Spring term Year Three pupils move on and use place value counters to explore sharing. The use of place value and times table facts are used alongside these concrete resources.

Pictorial



In Spring and Summer term pupils use their experience of the place value counters to divide a 2 digit number by a single digit to then make pictorial representations.

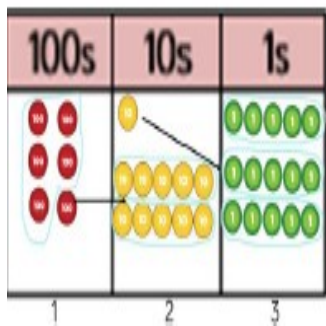
Abstract

$$\begin{aligned}42 & \div 3 \\42 & = 30 + 12 \\30 & \div 3 = 10 \\12 & \div 3 = 4 \\10 & + 4 = 14\end{aligned}$$

In Spring and Summer term Year Three pupils are able to make sense of the place value counters and use this to write calculations to show the process.

Year Four Division

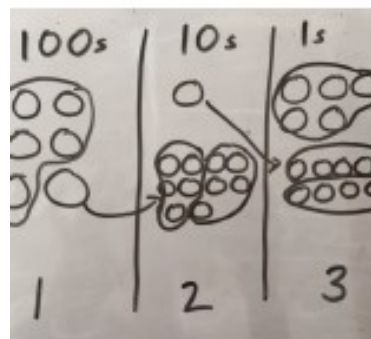
Concrete



In Autumn and Spring term Year Four pupils build upon the use of place value counters to divide. Pupils use place value counters to explore short division of a three digit number by a single digit. For Example, 615 divided by 5

1. Make 615 with the place value counters.
2. How many groups of 5 hundreds can you make with 6 hundred counters?
3. Exchange 1 hundred for 10 tens.
4. How many groups of 5 tens can you make with 11 ten counters?
5. Exchange 1 ten for 10 ones.
6. How many groups of 5 ones can you make with 15 ones?

Pictorial



In Spring and Summer term pupils use their experience of the place value counters to divide a 3 digit number by a single digit to then make pictorial representations.

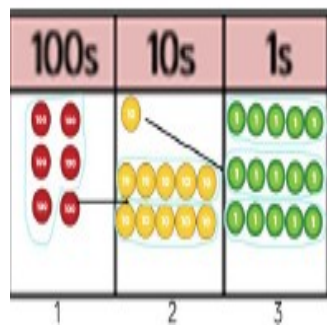
Abstract

$$\begin{array}{r} 123 \\ 5 \overline{) 615} \end{array}$$

In Spring and Summer term Year Four pupils are able to make sense of the place value counters and use then use the short division scaffold to complete calculations.

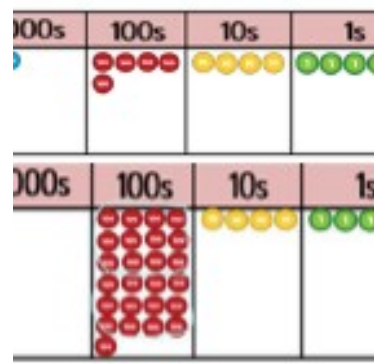
Year Five and Six Division

Concrete



In Autumn and Spring term pupils revise the use of place value counters to divide. Pupils use place value counters to consolidate their understanding of the short division method. This is applied to the division of four and five digit numbers by a single digit.

Pictorial



In Spring and Summer term pupils build upon their understanding of division to use place value counters to divide larger numbers by 2 digits. Pupils are introduced to the long division method at this stage.

For example, 2544 divided by 12

1. Make 2544 with place value counters.
2. We can't group 2 thousands into groups of 12 so we must exchange them.
3. We can group 24 hundreds into groups of 12 which leaves 1 hundred.

Abstract

$$\begin{array}{r} 02 \\ 12 \overline{) 2544} \\ \underline{24} \\ 1 \end{array}$$

In Spring and Summer term Year Five and Six apply their use of concrete resources to use the long division scaffold.