Calculations Policy

A guide for teachers

Presented to staff: **September 2018**

Approved by Governing Body:

Date of Review: August 2021

What is a calculation policy?

This calculation guidance helps teachers to identify the preferred methods of mental and written calculations for our school. It aims to build on the methods and procedures taught in the infant school. This guidance contains the key procedures that will be taught within our school.

Why do we need this?

It is necessary to ensure consistency and progression of methods for calculation throughout the school. This guidance provides teachers with a clear path of progression in calculation, allowing them to help children progress and identify stages of progression that children may find challenging.

How to use this guidance?

The guidance is into year group sections; addition and subtraction, multiplication and division. National age expectations are highlighted to show the stages children are expected to reach (National Curriculum 2014). High expectations will result in above average progression over KS2. When planning for a class it will be necessary to look at the year below, or in exceptional circumstances and agreed during pupil progress reviews, the year group above.

General Progression:

Establish mental methods based on a good understanding of place value

Use of informal jottings to aid mental calculations

Develop use of empty number line to help mental imagery and aid recording

Use models and images to promote understanding.

Use partitioning and recombining to aid informal methods

Use inverses to check calculations

Introduce expanded methods

Develop expanded methods into compact standard written form Once a child has become secure in a particular form they will move on to learn other methods, so that they build a bank of methods.

Children will be encouraged to then select an appropriate method to solve problems.

Before formal written methods can be used it is necessary for the children to have a secure understanding of the following.

Addition and subtraction:

To know place value to 3 digits, HTU

To be able to partition a 3 digit number into hundreds, tens and units.

To know securely addition and subtraction facts to 20

To be able to add 3 single digit numbers mentally

Addition and subtraction:

To know place value to 3 digits, HTU

To be able to partition a 3 digit number into hundreds, tens and units.

To know securely addition and subtraction facts to 20

To be able to add 3 single digit numbers mentally

To be able to add and subtract any pair of 2 digit numbers mentally, using a strategy of their choice

To be able to explain the strategy orally and record it using informal jottings.

Multiplication and Division:

To know 2, 3, 4, 5, and 10 times tables

To know the result of multiplying by 0 or 1

To understand 0 as a place holder

To be able to multiply two or three digit numbers by 10 and 100

To be able to double and halve two digit numbers mentally

To be able to use multiplication facts to derive mentally other multiplication facts

To be able to explain their mental strategies orally and record them using informal jottings

Before carrying out a calculation, children will be encouraged to consider some or all of the following points dependent on their current year group:

What size do I expect the answer to be?

Can I calculate in my head?

Could I use jottings to keep track of the calculation?

Do I need to use an expanded or compact written method?

Vocabulary

Misconceptions will occur, and need to be rectified quickly. It is necessary to use clear, unambiguous language to minimise misconceptions, and this should be consistent across the whole school.

When using column methods for subtraction the children should be told to 'exchange' a ten for units, or a hundred for tens, not to 'borrow' a ten or a hundred.

When teaching multiplication / division by 10, 100 etc., the figures move, not the decimal point. The decimal point always resides between the ones and the tenths!

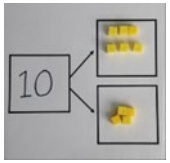
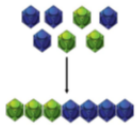
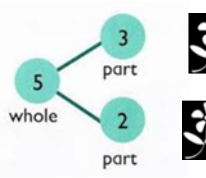
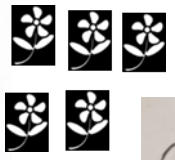
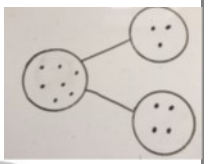
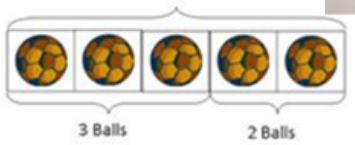
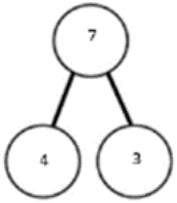
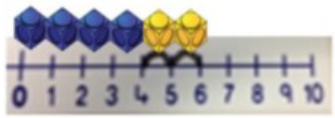
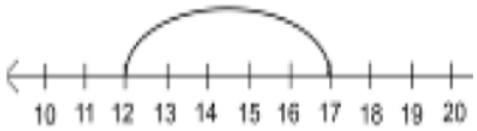
When multiplying an integer by 10 we do not ADD a 0. Adding implies addition and the addition of a number and zero means the original number remains unchanged.

Please note all National Curriculum information:

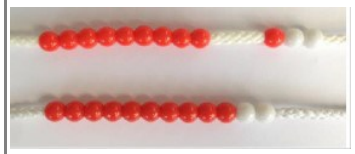
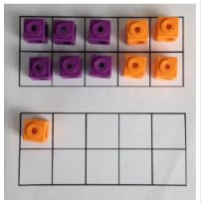
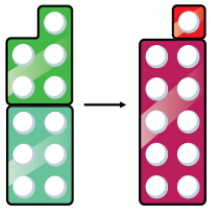
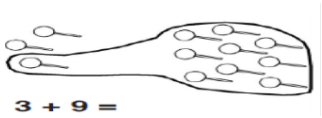
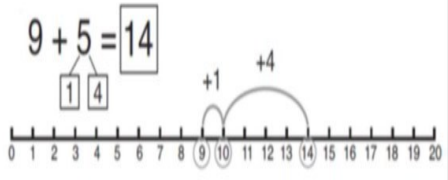
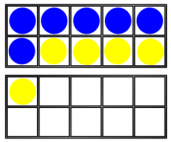
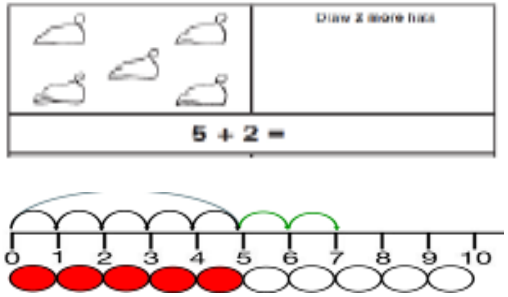
	EYFS/Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	Combining two parts to make a whole: part whole model Starting at the bigger number and counting on- using cubes Regrouping to make 10 using ten frame	Adding three single digits Use of Dienes to combine two numbers	Column method- regrouping Using place value counters (up to 3 digits)	Column method- regrouping (up to 4 digits)	Column method- regrouping Use of place value counters for adding decimals	Column method- regrouping Abstract methods Place value counters to be used for adding decimal numbers
Subtraction	Taking away ones Counting back Find the difference Part whole model Make 10 using the ten frame	Counting back Find the difference Part whole model Make 10 Use of Dienes	Column method with regrouping (up to 3 digits us- ing place value counters)	Column method with regrouping (up to 4 digits)	Column method with regrouping. Abstract for whole numbers Start with place value counters for decimals- with the same amount of decimal places	Column method with regrouping Abstract methods Place value counters for decimals - with different amounts of decimal places

Multiplication	Recognising and making equal groups Doubling Counting in multiples. Use cubes, Numicon and other objects in the classroom	Arrays- showing commutative multiplication	Arrays 2d × 1d using Dienes	Column multiplication - introduced with place value counters (2 and 3 digit multiplied by 1 digit)	Column multiplication Abstract only but might need a repeat of year 4 first(up to 4 digit numbers multiplied by 1 or 2 digits)	Column multiplication Abstract methods (multi-digit up to 4 digits by a 2 digit number)
Division	Sharing objects into groups Division as grouping e.g. I have 12 sweets and put them in groups of 3, how many groups? Use cubes and draw round 3 cubes at a time	Division as sharing Division as grouping Repeated subtraction Division with a remainder-using lollipop sticks – **GDS children only**	Division with a remainder - using lollipop sticks, times tables facts and repeated subtraction 2d divided by 1d using Dienes or place value counters	Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)	Short division (up to 4 digits by a 1 digit number including remainders)	Short division Long division with place value counters (up to 4 digits by a 2 digit number) Children should exchange into the tenths and hundredths column too

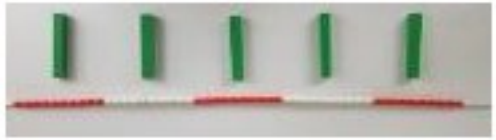
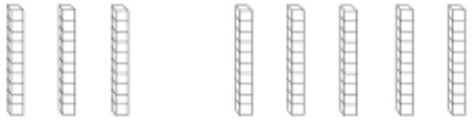
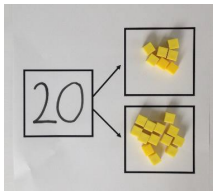
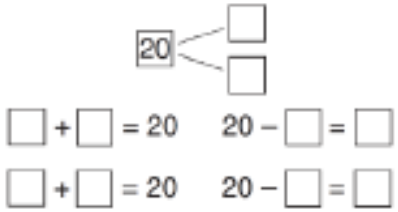
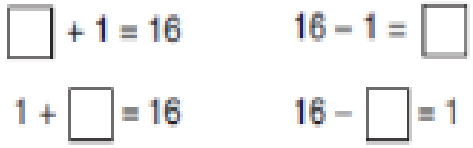
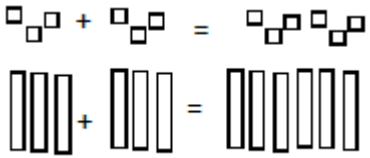
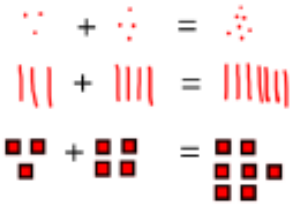
Y1 Addition +

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Combining two parts to make a whole part: part -whole model	Use cubes to add two numbers together as a group or in a bar (use other resources too e.g. eggs, shells, teddy bears, cars)  Use part whole model.  	Use pictures to add two numbers together as a group or in a bar to represent the concrete tool    	Use the part-part whole diagram as shown above to move into the abstract. 5 + 3 = 8 8 = 5 + 3  4 + 3 = 7 **Four is a part, 3 is a part and the whole is seven.** 
Starting at the bigger number and counting on	Start with the larger number and then count on to the smaller number 1 by 1   	Start at the larger number on the number line and count on in ones or in one jump to find the answer. 12 + 5 = 17 	Place the larger number in your head and count on the smaller number to find your 5 + 12 = 17 What is 5 more than 12? What is the sum of 5 ? What is the total of 5 and 12?

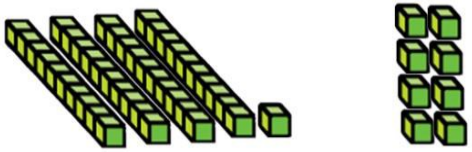
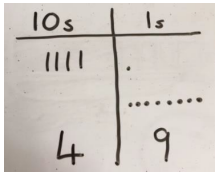
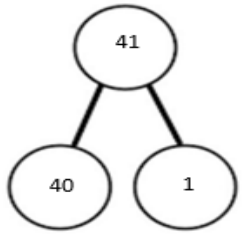
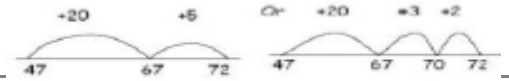
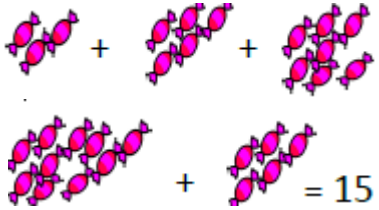
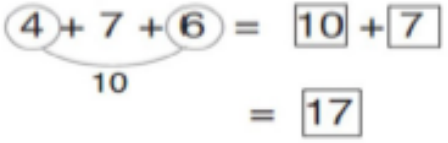
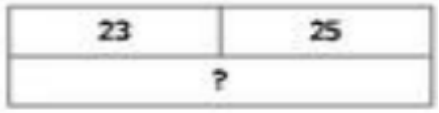
Y1 Addition +

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Regrouping to make 10 *This is an essential skill for column addition later.*	Start with the bigger number and use the smaller number to make 10. Use ten frames.  6+5=11  	Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10   Children to draw the ten frame and counters/cubes. 	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on 6 + □ = 11 6 + 5 = 5 + □ 6 + 5 = □ + 4
Represent and use number bonds and related subtraction facts	2 more than 5 		Emphasis should be on the language '1 more than 5 is equal to 6.' *'2 more than 5 is 7.'* *'8 is 3 more than 5.'*

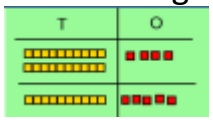
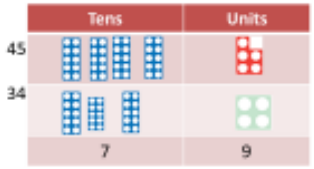
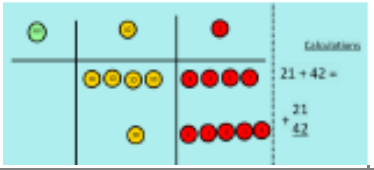
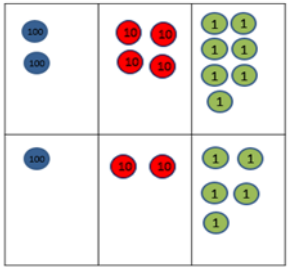
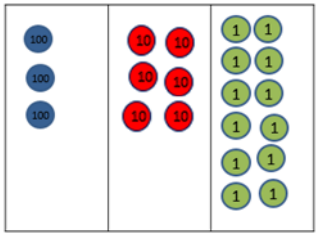
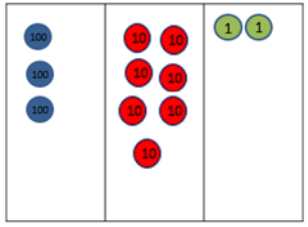
Y2 Addition +

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Adding multiples of 10	Model using Dienes and bead strings 50=30+20 	Use representations for base ten  3 tens + 5 tens = _____ tens 30+60 =	20 + 30 = 50 70 = 50 + 20 40 + □ = 60
Use known number facts Part part whole	Children explore ways of making numbers within 20 		
Using known facts	Children draw representations of H,T and O 	Children draw representations of H,T and O 	3+4=7 Leads to 30+40=70 Leads to

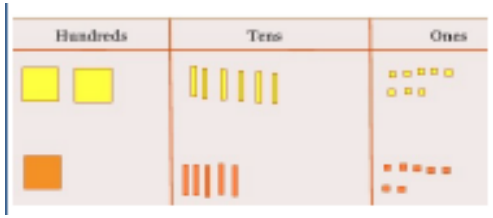
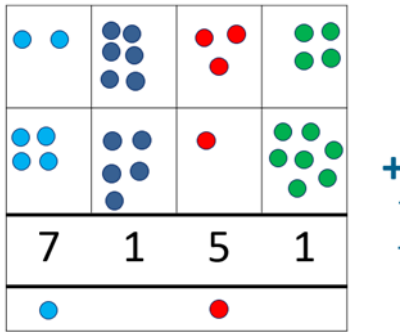
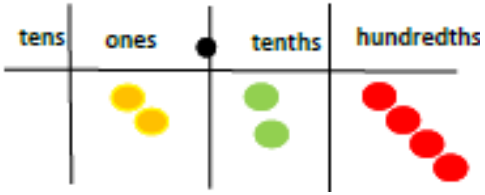
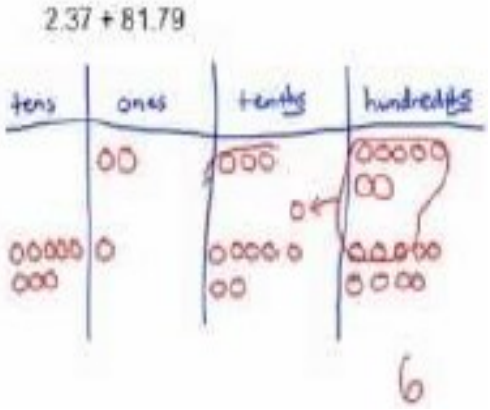
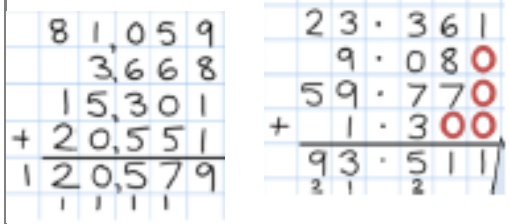
Y2 Addition +

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Add a two digit number and ones. Continue to develop understanding of partitioning and place value	TO + O using Dienes. 41+8= 	Children to represent the Dienes e.g. lines for tens and dots for ones 	41 + 8 1 + 8 = 9 40 + 9 = 49 
Add two 2-digit numbers	Model using Dienes , place value counters and Numicon 	Draw the tens and ones  Use number line and bridge ten using part whole if necessary 	 20 + 40 = 60 5+ 7 =12 60 + 12 = 72
Add three 1-digit numbers	Combine to make 10 first if possible, or bridge 10 then add third digit 	Regroup and draw Representation 	Combine the two numbers that make/bridge ten then add on the third 
Bar model	 3 + 4 = 7	 7 + 3 = 10	 23 + 25 = 48

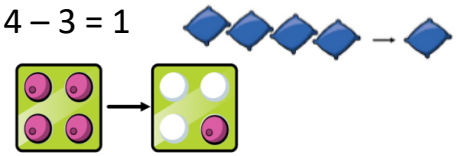
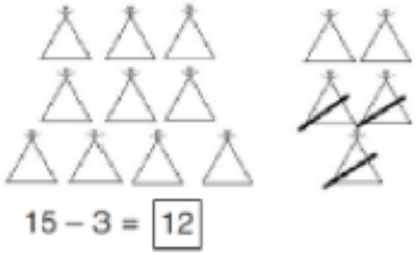
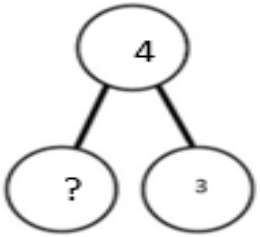
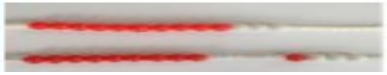
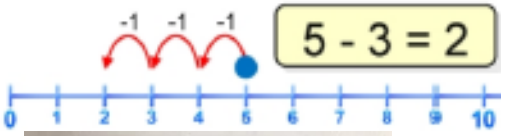
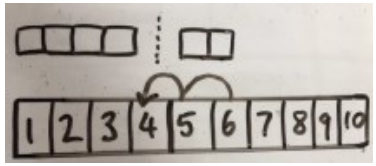
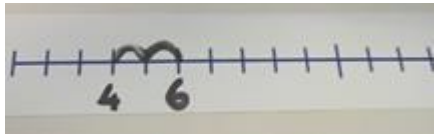
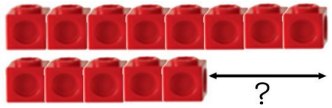
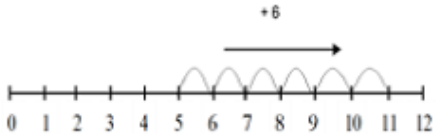
Y3 Addition +

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Column Addition—no regrouping (friendly numbers) Add two or three 2 or 3-digit numbers	Model using Dienes or Numicon  Add together the ones first, then the tens  Move to using place value counters 	Children move to drawing the counters using a tens and one frame 	Add the ones first, then the tens, then the hundreds 247 +125 12 60 300 372
Column Addition with regrouping	Exchange ten ones for a ten. Model using Numicon, Dienes and place value counters. 	Children can draw a representation of the grid to further support their understanding, carrying the ten underneath the line 	Add the ones first, then the tens, then the hundreds 2 4 7 + 1 2 5 3 7 2 1

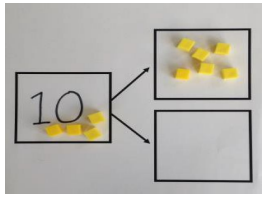
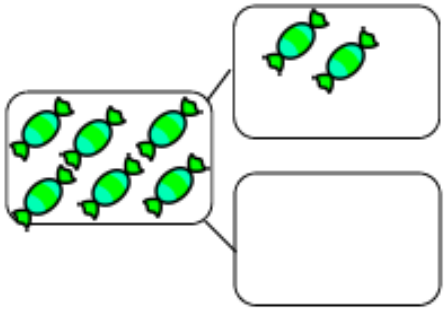
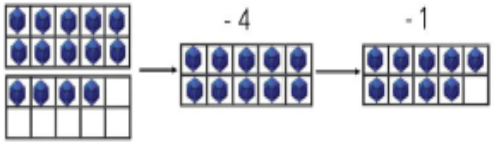
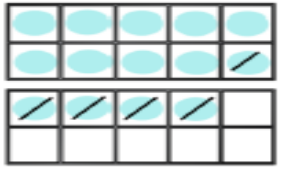
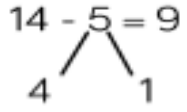
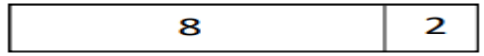
Y4,5,6 Addition +

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Y4 Add numbers with up to 4 digits	Children continue to use Dienes or place value counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand 	Draw representations using place value grid 	Move from expanded method onto carrying hundreds as well as tens Relate to money and measures 2634 +4517 7151 1 1
Y5 Add numbers with more than 4 digits Add decimals with 2 decimal places, in-cluding money	Introduce decimal place value counters and model exchange for addition 		172.83 + 54.68 227.51 1 1 1
Y6 Add several numbers of increasing Complexity, use cross curricular links	As Y5 Including adding money, measures and decimals with different decimal points	As Y5	Insert zeros for place holders 

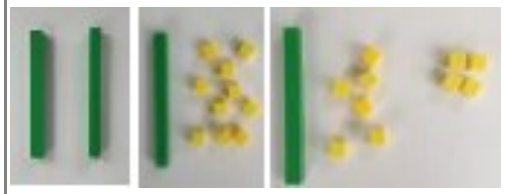
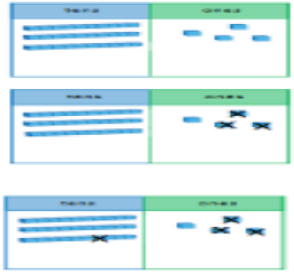
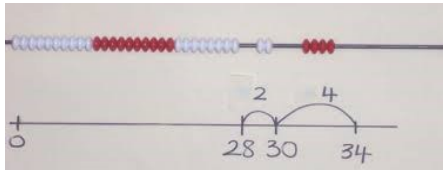
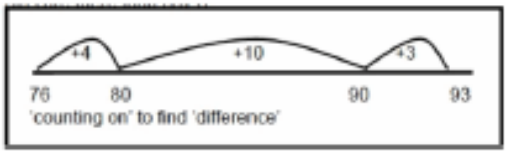
Y1 Subtraction -

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Taking away ones	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 	Children to draw the concrete resources they are using and cross out the correct amount  15 – 3 = 12	 4- 3 = __= 4 – 3
Counting back	Move objects away from the group, counting backwards  Move the beads along the bead string as you count backwards 	Count back in ones using a number line  	Encourage children to use an empty number line  Put 13 in your head, count back 4. What number are you at?
Find the Difference	Finding the difference (using cubes, Numicon or Dienes) Calculate the difference between 8 and 5. 	Count on using a number line to find the difference 	Find the difference between 8 and 5 Hannah has12 sweets and her sister has 5. How many more does Hannah have?

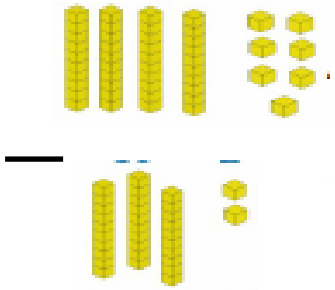
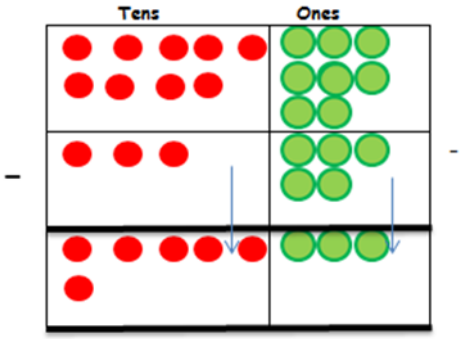
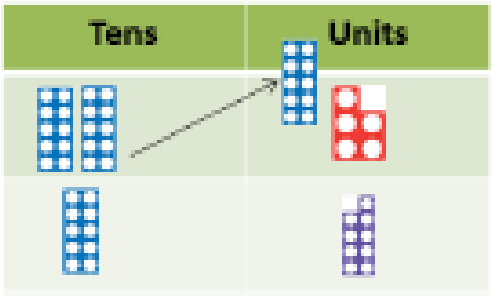
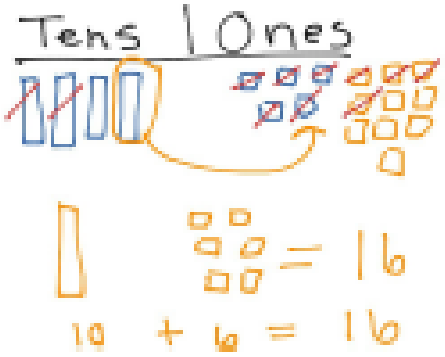
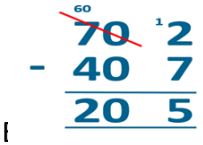
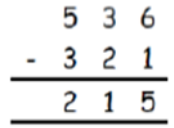
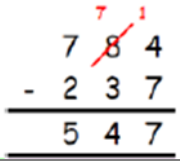
Y1 Subtraction -

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Represent and use number bonds and related subtraction facts within 20 Part Part Whole model	Link to addition. Use Part Part Whole model to model the Inverse  10—6 = 4 If 10 is the whole and 6 is one of the parts, what 's the other part?	Use pictorial representations to show the part 	Move to using numbers within the part whole model 
Making 10	Using ten frames. 14 – 5  	Children to present the ten frame pictorially and discuss what they did to make 10 	Children to show how they can make 10 by partitioning  14 – 4 = 10 10 – 1 = 9
Bar model	 5—2 = 3		 10 = 8 + 2 10 = 2 + 8 10—2 = 8 10—8 = 2

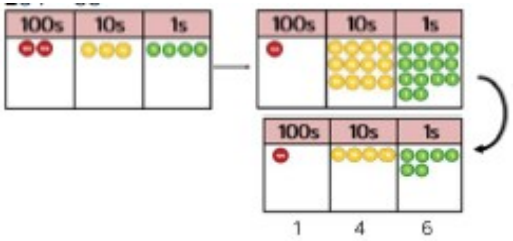
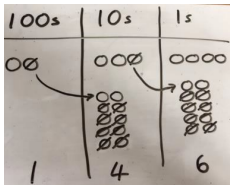
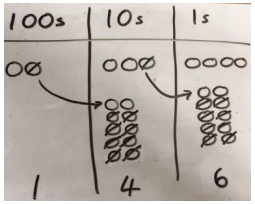
Y2 Subtraction -

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Regroup a ten into ten ones	Use Dienes to show how to change a ten into ten ones, use the term 'take and make' 	20— 4 = 	30 — 5 = 25
Partitioning to subtract without regrouping	Use Dienes to show how to partition the number when subtracting without regrouping 34—13 = 21 	Children draw representations of Dienes and cross off 43—21 = 22 	58—25 =
Make ten strategy *Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.*	Use a bead bar or bead strings to model counting to next ten and the rest 	Use a number line to count on to next ten and then the rest 	93—76 = 17

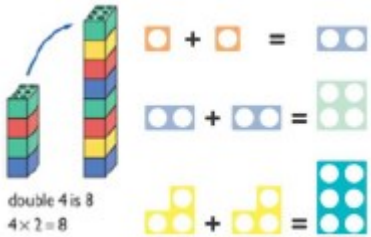
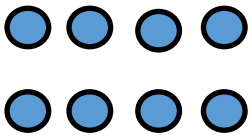
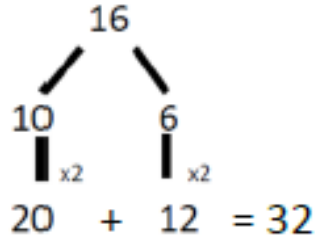
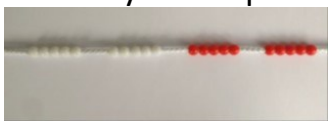
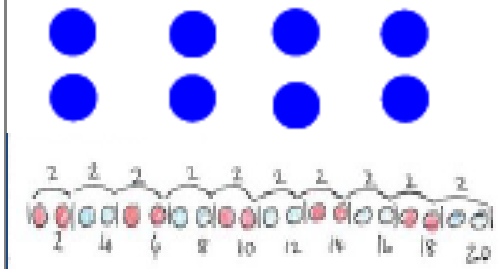
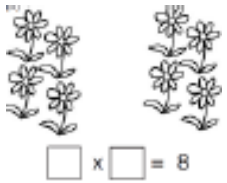
Y3 Subtraction -

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Column subtraction without regrouping	Use Dienes or Numicon to model 47—32 	Draw representations to support understanding 	Expanded column subtraction 90 8 - 30 5 60 3
Column subtraction with regrouping	Begin with Dienes or Numicon. Move to place value counters, modelling the exchange of a ten into ones. Use the phrase ‘take and make’ for exchange 	Children may draw Dienes or place value counters and cross off 	Begin by partitioning into place value columns  No exchanges  One exchange 

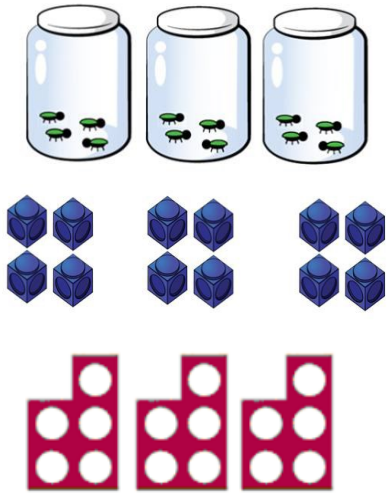
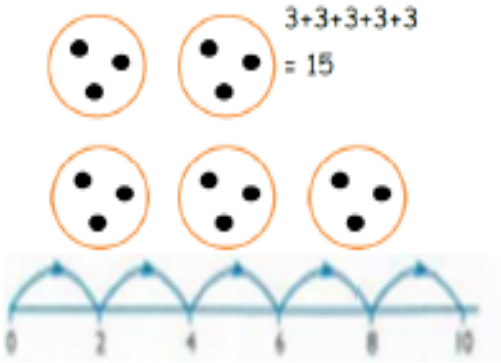
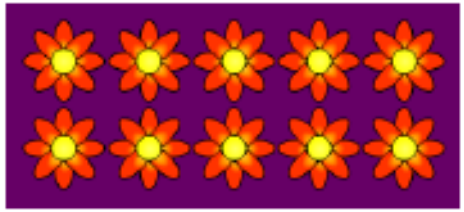
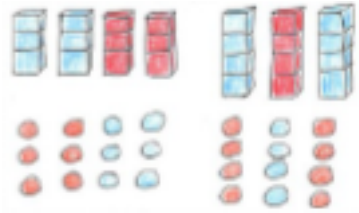
Y4,5,6 - Subtraction

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Y4 Subtract with up to 4 digits Introduce decimal subtraction through context of money	Model process of exchange using Numicon, Dienes and then move to place value counters 234 – 88 	Represent the base 10 pictorially, remembering to show the exchange 	Formal column method. Children must understand what has happened when they have crossed out digits using the term exchange. Up to 3 exchanges 200 30 2 -100 10 4 100 10 8 2 3 4 - 8 8 6
Y5 Subtract with at least 4 digits, including money and measures Subtract with decimal values	As Year 4	Represent the base 10 pictorially, remembering to show the exchange 	Use zeros for place-holders 6232 - 4814 1418 7 16 9 0 - 3 7 2 5 6 7 9 6 5
Y6 Subtract with large and more complex numbers and decimal values		Bar models to support learning A | B 631,255	8 10 6 9 9 - 8 9 9 4 9 6 0 7 5 0 10 5 11 9 kg - 3 6 0 8 0 kg 6 9 3 9 kg

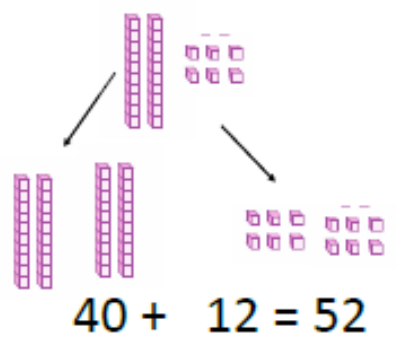
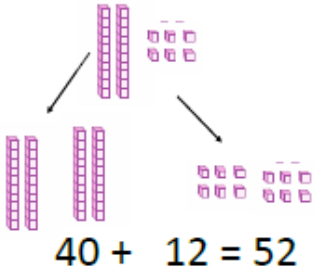
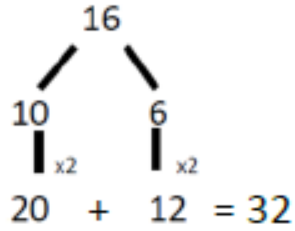
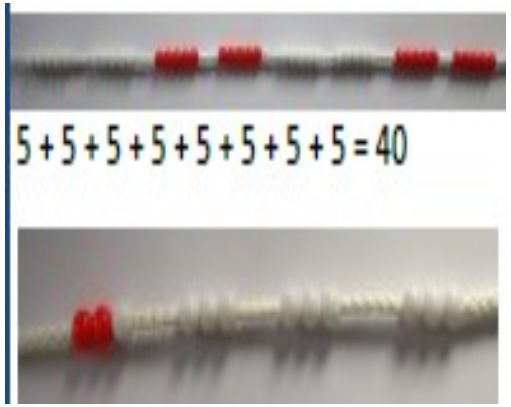
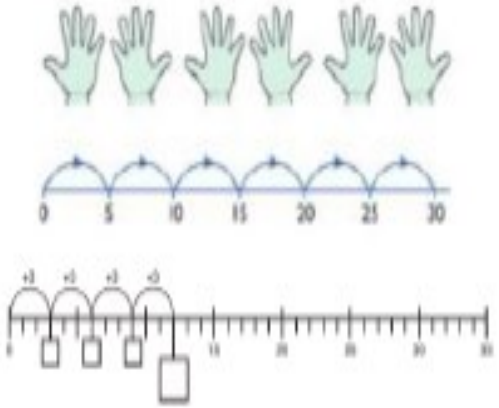
Y1 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Doubling	Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling 	Draw pictures to show how to double numbers Double 4 = 8 	Partition a number and then double each part before recombining it back together 
Counting in multiples	Count the groups as children are skip counting, children may use their fingers as they are skip counting  	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
Making equal groups and counting the total	Use manipulatives to create equal groups  	Draw and make representations 	2 x 4 = 8

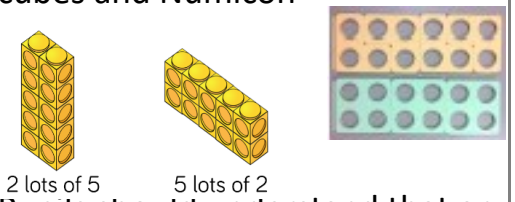
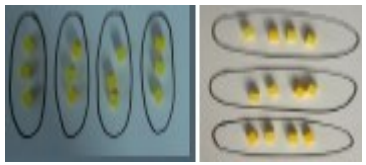
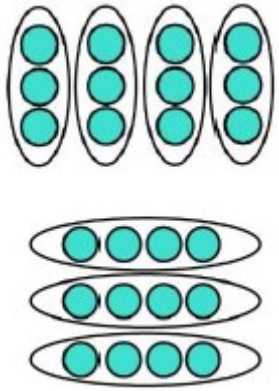
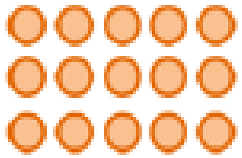
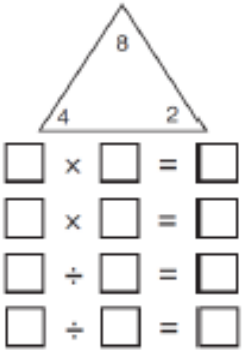
Y1 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Repeated addition	Use different objects to add equal groups 	Use pictorial including number lines to solve problem There are 3 sweets in a bag. How many sweets in 5 bags? 	Write addition sentences to describe objects and pictures  3 × 4 = 12 4 + 4 + 4 = 12
Understanding arrays	Use objects laid out in arrays to find the answers to 2 lots 5, 3 lots of 2 etc. 	Draw representations of arrays to show understanding 	3 x 2 = 6 2 x 5 = 10

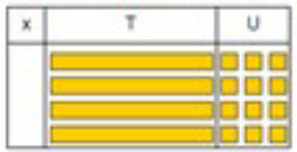
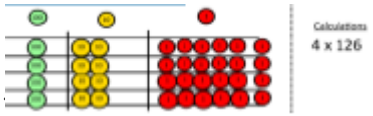
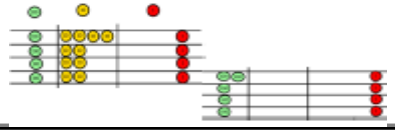
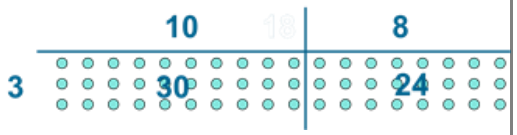
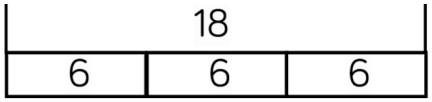
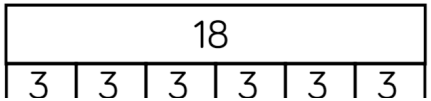
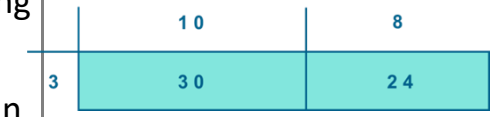
Y2 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Doubling	Model doubling using Dienes and place value counters 	Draw pictures and representations to show how to double numbers 	Partition a number and then double each part before recombining it back together 
Counting in multiples of 2, 3, 4, 5, 10 from 0 Repeated addition	Count the groups as children are skip counting, children may use their fingers as they are skip counting 	Number lines, counting sticks and bar models should be used to show representation of counting in multiples 	Count in multiples of a number aloud Write sequences with multiples of numbers 0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25 , 30 $4 \times 3 = \square$

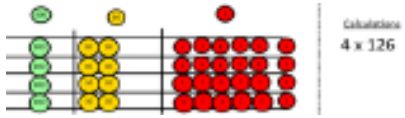
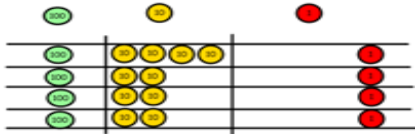
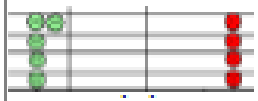
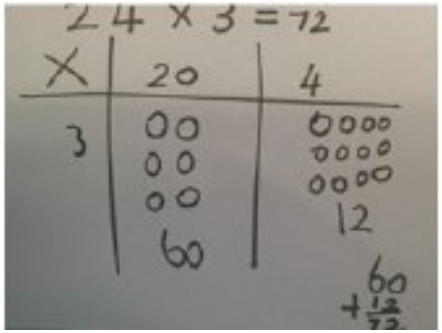
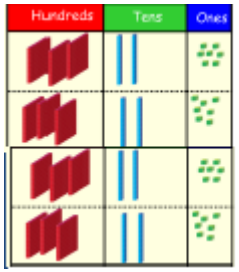
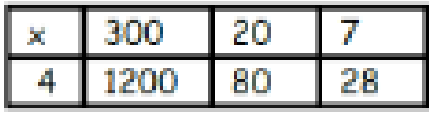
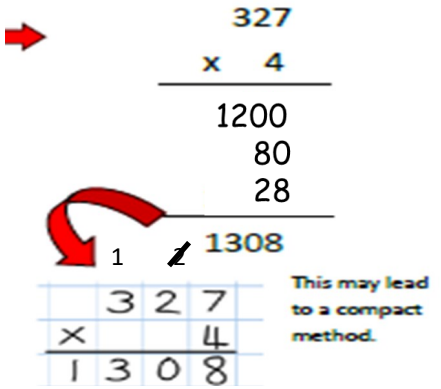
Y2 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Multiplication is commutative	Create arrays using counters and cubes and Numicon  2 lots of 5 5 lots of 2 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 	Use representations of arrays to show different calculations and explore commutativity 	12 = 3 × 4 12 = 4 × 3 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
Using the Inverse This should be taught alongside division, so pupils learn how they work alongside each other	Use cubes to show multiplication and division fact families 		Show all 8 related fact families 2 x 4 = 8 2 = 8 ÷ 4 4 x 2 = 8 4 = 8÷ 2 8 = 2 x 4 8 ÷ 4 = 2 8 = 4 x 2 8 ÷ 2 = 4

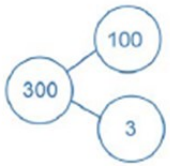
Y3 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Main emphasis on learning times tables. Calculations to be linked initially to times tables Multiply 2 digit numbers by 1 digit numbers	Show the links with arrays to first introduce the grid method.   Move onto Dienes  Move on to place value counters to show how we are finding groups of a number.  Fill each row with 126  Add up each column, starting with the ones making any exchanges needed 	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.  Give children opportunities for children to explore this and deepen understanding using Dienes apparatus and place value counters Bar models used to aid calculations   	Start with multiplying by one digit numbers and showing the clear addition alongside the grid  Move onto an expanded method EXPANDED HTU 23 7 x 140 (20x7) 21 (3x7) 161

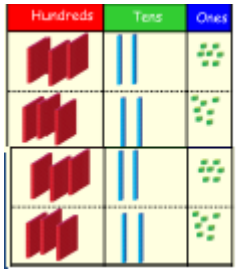
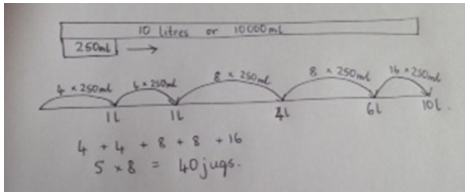
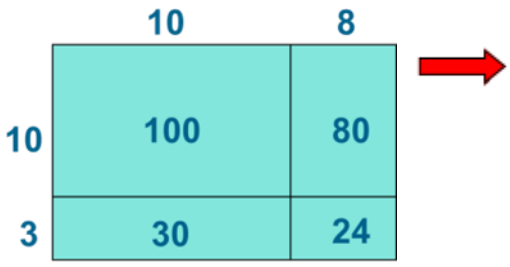
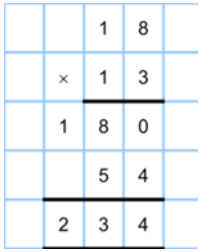
Y4 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Grid method recap from year 3 for 2 digits x 1 digit Move to multiplying 3 digit numbers by 1 digit.—Year 4 expectation	Use place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows  Fill each row with 126  Add up each column, starting with the ones making any exchanges needed 	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 	Start with multiplying by one digit numbers and showing the clear addition alongside the grid | x	30	5
---	---	---
7	210	35	 210 + 35 = 245
Column Multiplication Multiplication carrying above the columns, addition carrying below the line	This is initially done where there is no regrouping. 321 x 2 = 642  It is important at this stage that they always multiply the tens first.	 | x	300	20	7
4	1200	80	28	 Number lines can support learners when solving problems with multiplication alongside the formal written methods	

Y4 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Multiplying by 10 and 100		 Use of different representations to show questions	

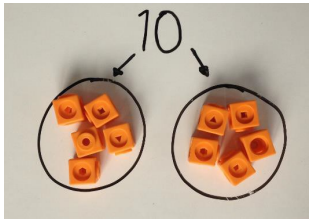
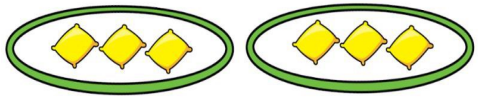
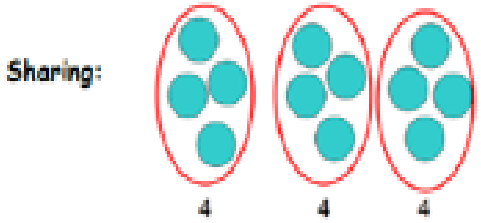
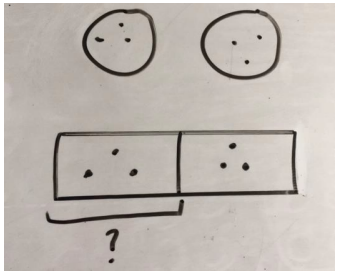
Y5,6 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Column Multiplication for 3 and 4 digits x 2 digit	This is initially done where there is no regrouping. 321 x 2 = 642  It is important at this stage that they always multiply the hundreds, tens then ones.	<table><tr><td>x</td><td>300</td><td>20</td><td>7</td></tr><tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr></table> Number lines can support learners when solving problems with multiplication alongside the formal written methods Bar models to be used to support calculations  	
Column Multiplication *Multiplication carrying above the columns, addition carrying below the line*	Manipulatives may still be used with the corresponding long multiplication modelled alongside	 	 124 × 26 becomes 1 2 1 2 4 × 2 6 2 4 8 0 7 4 4 3 2 2 4 1 1 Answer: 3224

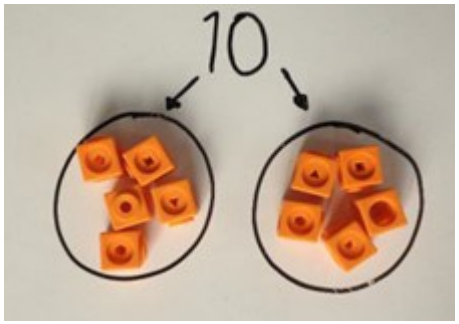
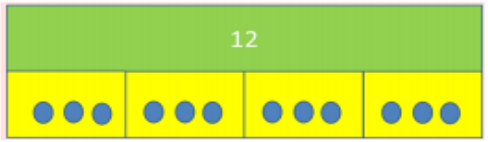
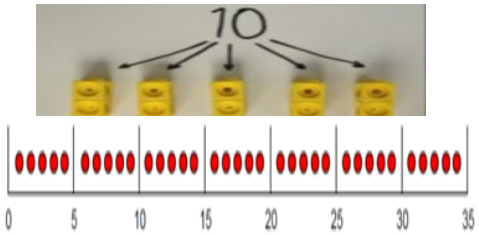
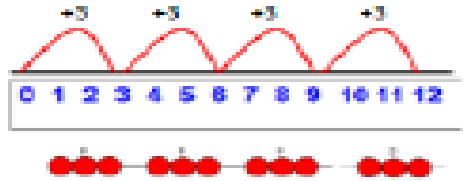
Y6 Multiplication x

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Multiplying 4 digit number by a 2 digit number Multiplication carrying above the columns, addition carrying below the line			342 × 7 becomes 3 4 2 × 7 2 3 9 4 24 × 16 becomes 2 4 × 1 6 2 4 0 1 4 4 3 8 4 Answer: 384 124 × 26 becomes 1 2 4 × 2 6 2 4 8 0 7 4 4 3 2 2 4 Answer: 3224
Multiplying decimals up to 2 decimal places by a single digit			Remind children that the single digit belongs in the units column. Line up the decimal points in the question and the answer 3 · 1 9 × 8 2 5 · 5 2

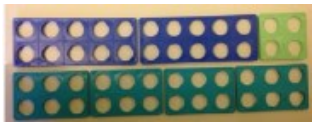
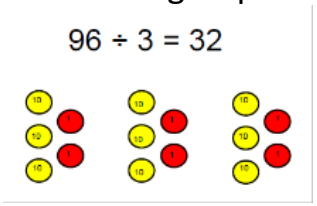
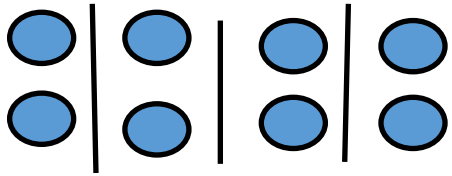
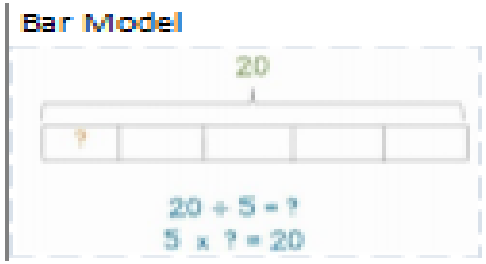
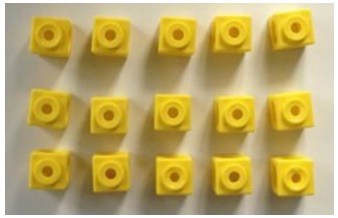
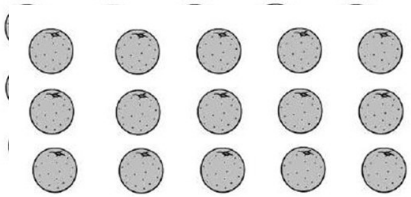
Y1 Division ÷

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Division as sharing	Sharing using a range of objects   I have 10 cubes, can you share them equally in 2 groups?  	Children use pictures or shapes to share quantities 8 shared between 2 is 4   12 shared between 3 is 4  	12 shared between 2 is 6

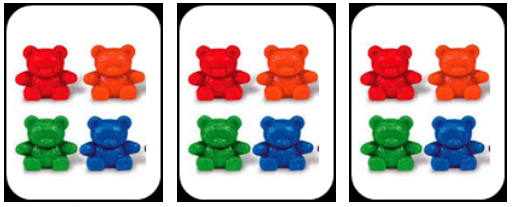
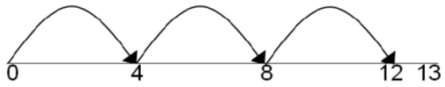
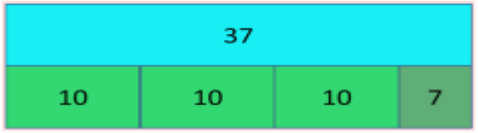
Y2 Division ÷

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Division as sharing	 I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities  Bar Modelling 	12 ÷ 3 = 4 6 sweets shared between 2 people. How many do they get each?
Division as grouping	Divide quantities into equal groups Use cubes, counters, objects or place value counters to aid un-derstanding 	Children to use pictures or shapes to group quantities  Use number lines for grouping  12 ÷ 3 = 4	21 ÷ 7 = 3 There are 6 sweets, how many people can have 2 each?

Y3 Division ÷

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding  24 divided into groups of 6 = 4 	Children to use pictures or shapes to group quantities  	How many groups of 6 in 24? 24 ÷ 6 = 4
Division with arrays	Link division to multiplication by creating an array and thinking about the number sentences that can be created  5 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	Draw an array and use lines to split the array into groups to make multiplication and division sentences 	Find the inverse of multiplication and division sentences by creating eight linking number sentences 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7 28 = 7 x 4 28 = 4 x 7 4 = 28 ÷ 7 7 = 28 ÷ 4

Y3 Division ÷

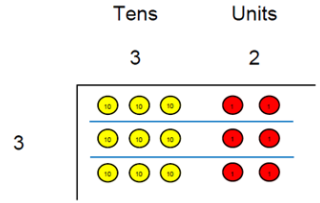
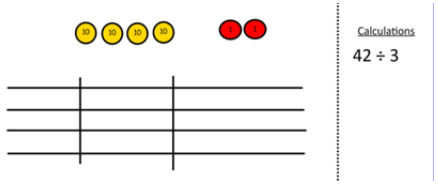
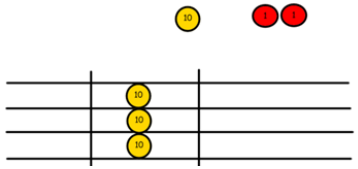
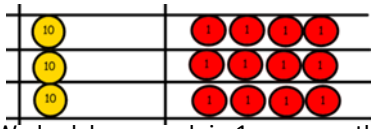
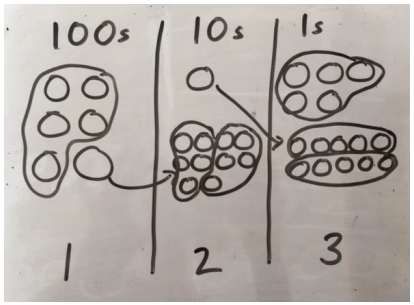
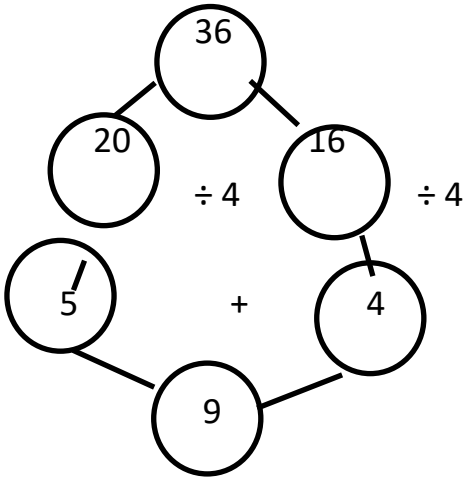
Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Division with remainders	Divide objects between groups and see how much is left over 14 ÷ 3 = 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder  Draw dots and group them to divide an amount and clearly show a remainder  	Complete written divisions and show the remainder using r 

Example without remainder:
40 ÷ 5
Ask "How many 5s in 40?"

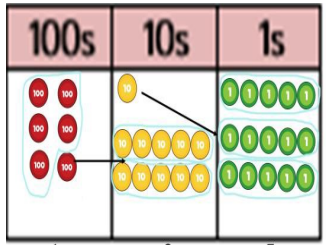
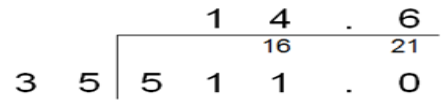
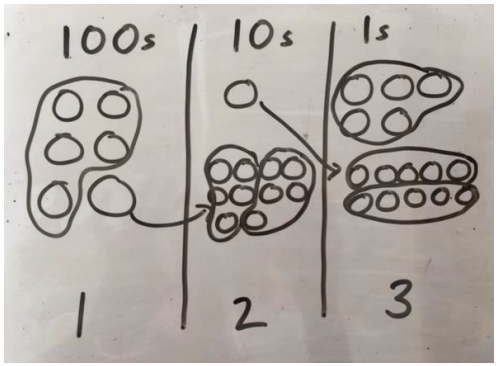
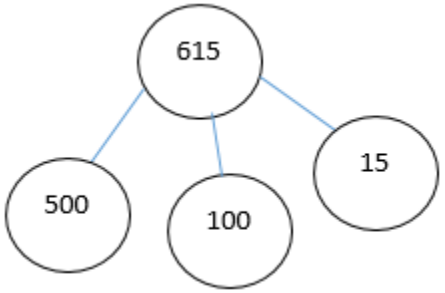
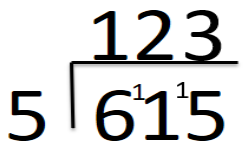
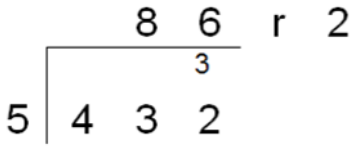
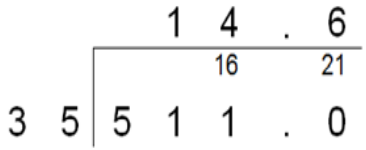
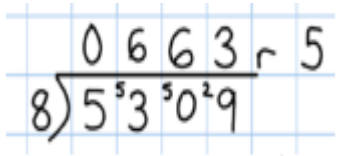
Example with remainder:
38 ÷ 6

For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts.

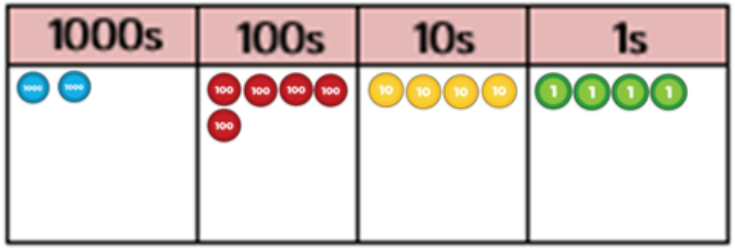
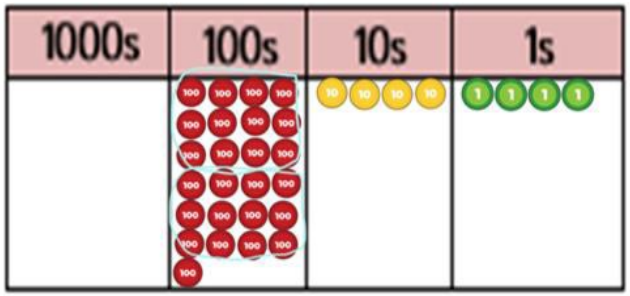
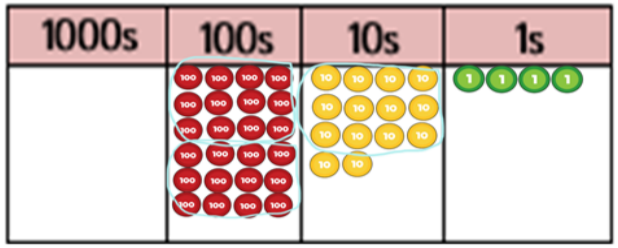
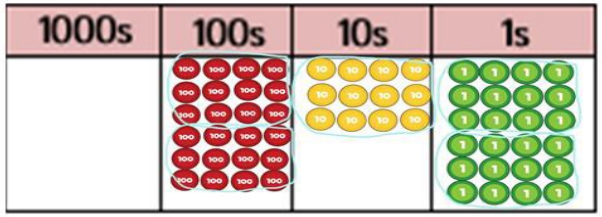
Y4,Division ÷

Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Divide at least 3 digit numbers by 1 digit Short Division	Short division using place value counters to group  Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.  We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14	Represent the place value counters pictorially  Additive decomposition (with a range of circle numbers 36 ÷ 4 = 9 	Children to the calculation using the short division scaffold. Begin with no remainders 123 5 ⟌ 6¹1¹5

Y4,5,6 Division ÷

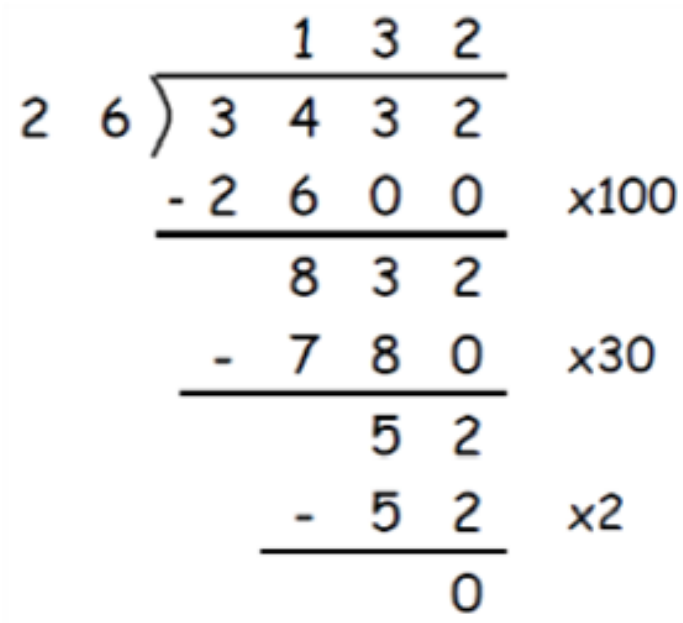
Objective / Strategy	Concrete - Tool	Pictorial - Picture	Abstract
Divide at least 3 digit numbers by 1 digit Short Division	Short division using place value counters to group 615 ÷ 5   1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 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?	Represent the place value counters pictorially  Additive decomposition 615÷5=  	Children to the calculation using the short division scaffold. Begin with no remainders  Move onto divisions with a remainder  Finally move into decimal places to divide the total accurately  

Y6 Division ÷

Objective / Strategy	Concrete - Tool
Long division 2544 ÷ 12	 We can't group 2 thousands into groups of 12 so will exchange them.  We can group 24 hundreds into groups of 12 which leaves with 1 hundred. $\begin{array}{r} 02 \\ 12\overline{)2544} \\ 24 \\ \hline 1 \end{array}$  After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens. $\begin{array}{r} 021 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 2 \end{array}$  After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder. $\begin{array}{r} 0212 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 24 \\ 24 \\ \hline 0 \end{array}$

Y6 Division ÷

Objective / Strategy	Pictorial - Abstract
Long division	Division using repeated subtraction– removing chunks



Y6 Division ÷

Objective / Strategy	Abstract
Long division	Division with remainders