Cringleford Primary School Calculation Policy

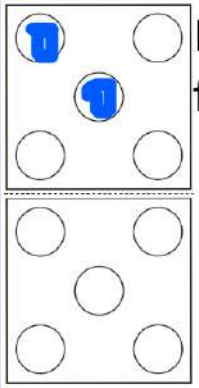
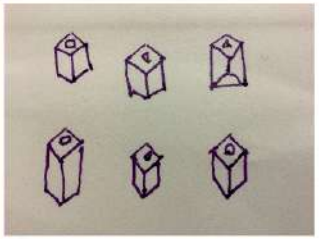
Glossary of key terms:

Concrete – The first stage of learning new content. New mathematical concepts are taught using physical objects to allow children to 'see' the maths happening in front of them

Pictorial – Maths is now represented as images and pictures, either printed or drawn by the children themselves. This method gives visual value to the maths that children are learning but removes it from their hands and commits it to paper.

Abstract – The 'numbers' stage of maths. Children will have seen the actual numbers all the way through their learning, but this stage removes other visual scaffolding for the maths at hand.

YR COUNTING

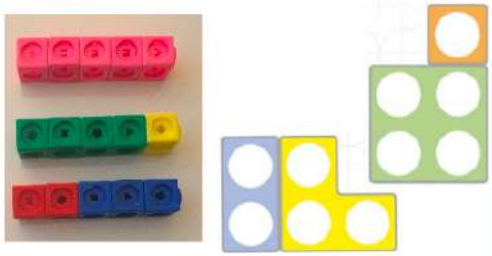
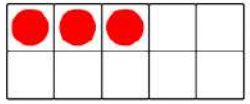
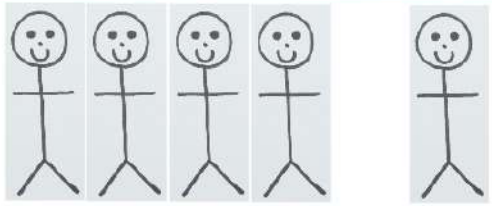
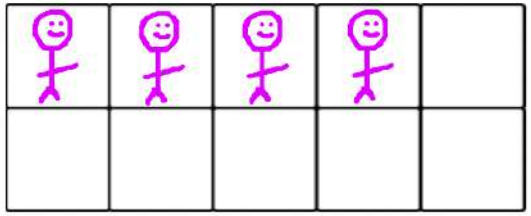
Objective & Strategy	Concrete	Pictorial	Abstract
Subitising - being able to say/recognise how many without counting	  Recognising amounts on face of dice Fluently making and recognising parts of a whole amount 	 Filling in dice frames	Verbally: "2 are red, 3 are blue, and the whole is 5" "2 and 3 more makes 5"
Cardinality - knowing the number counted up to represents the amount in a group	 Counting up to a certain amount and saying the number we stop on		1, 2, 3, 4, 5
One-to-one principal - counting each item in a set only once	 Touching objects as we count to know that it has already been counted.	 Pointing to, crossing out or marking objects to know you have counted it	When counting, only saying each number's name once.

YR

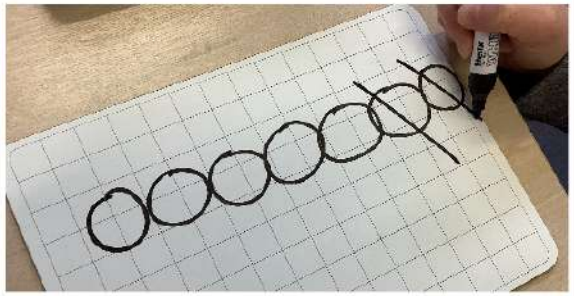
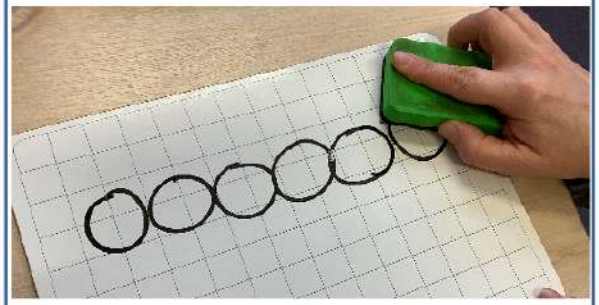
COUNTING

Objective & Strategy	Concrete	Pictorial	Abstract
Stable Order & Order Irrelevance - number names said in the correct order, not mattering which order we count in			
Abstraction Principle - we count everything the same no matter what it is	 Counting objects in a group regardless of different shape, colour or size - there are 5 objects.		

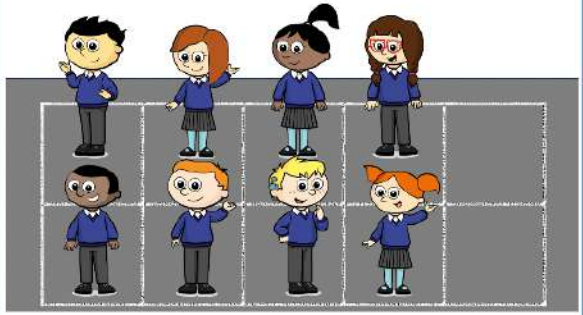
YR ADDITION +

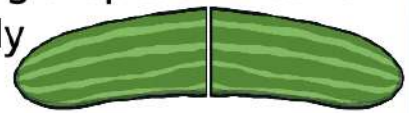
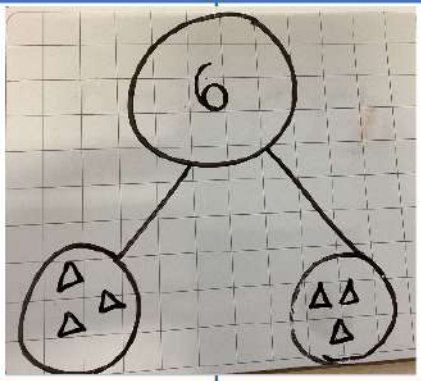
Objective & Strategy	Concrete	Pictorial	Abstract
Combining two amounts to make a total Represent and use number bonds up to 5, and later 10	 Putting 2 amounts together and saying the new total that they make e.g. "4 and 1 more makes 5."   	 Drawing pictures of amounts and saying what happens when we add e.g. 4 friends and 1 more makes 5 	4 + 1 = 5 "If we have 4 and 1 more, the total is 5" "5 is made of 4 and 1, and 4 and 1 makes 5" 5 = 2 + 3 "5 is made up of 2 and 3, 2 and 3 makes 5" 
Finding one more than a given number	 Using any objects, children can count on from a given number and say the following one, saying that this means it is one more.	 Children can draw another star to find the new total and then say what is 1 more than 6	"1 more than 6 is 7" "6 and then another 1 is 7" "7 is 1 more than 6" "the number that comes after is 1 more"

YR SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Counting back to subtract/ minus/take away	Counting objects (bears?) "Taking away means we have less"	 Crossing out objects to show being taken away	7 - 2 = 5 "I have 7 balls and if i take away 2 balls I will have 5 left"
Finding the difference (how many more/ less?)	 Cube towers (book votes) "How many more brown cubes than green cubes?"		"There are 3 cubes on the blue tower and 5 cubes on the yellow tower. The yellow tower has 2 more" "What is the same? What is different?"
Finding one less than a given number	Using fingers Towers of cubes Counting objects		"1 less than 6 is 5"

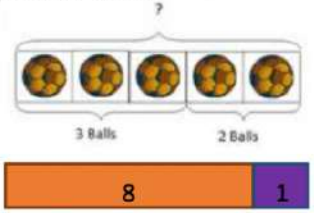
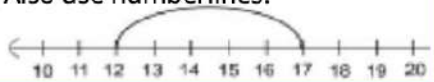
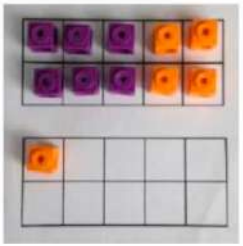
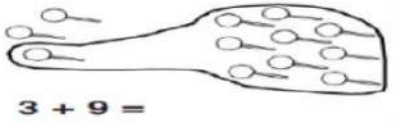
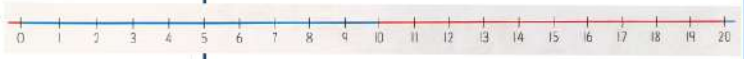
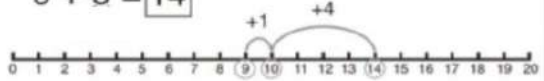
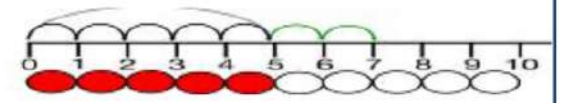
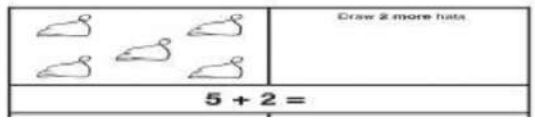
YR MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Making pairs to find odds and evens	Socks photo Sorting socks into pairs to understand that '2' makes a pair, which makes a number even	 Using Tens Frame to model pairs of numbers	"I know that 5 is odd because there is one number left without a partner" "Six is even because each 1 has a partner to pair up with"
Counting in groups or amounts of	 Counting in multiples of 2 as each finger is raised	 Using any opportunity to model counting in small amounts	
Doubling numbers			Double ____ is ____

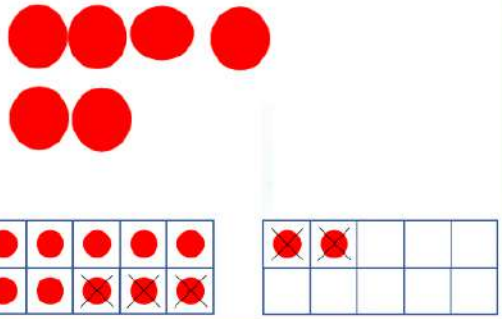
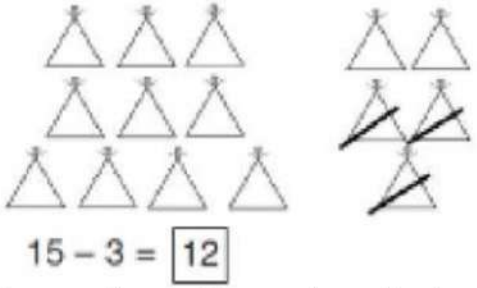
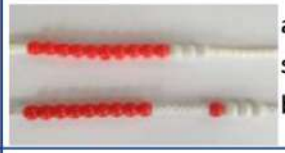
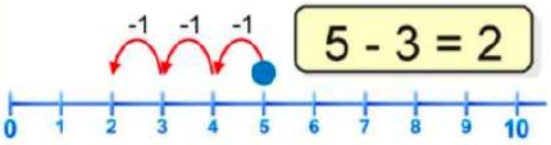
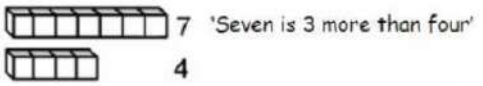
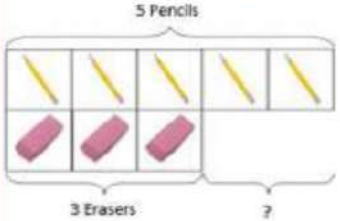
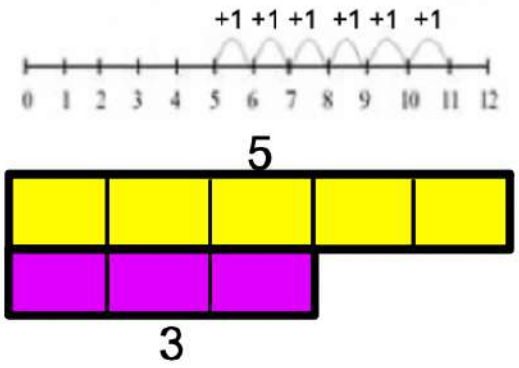
Objective & Strategy	Concrete	Pictorial	Abstract
Sharing amounts into groups	 Sharing objects during role play		
Halving	Finding two amounts that fit equally  Halving shapes and items equally 		

YR DIVISION ÷

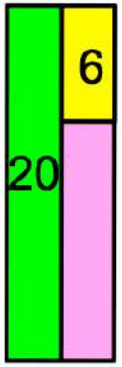
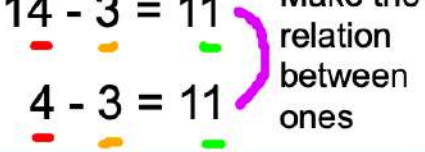
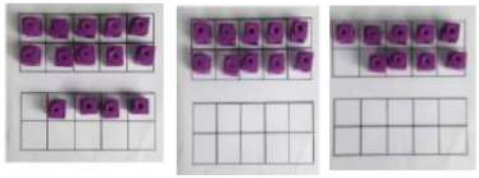
Y1 ADDITION +

Objective & Strategy	Concrete	Pictorial	Abstract
Combining two amounts to make a total	  Use cubes to add two numbers together as a group or in a bar. 	Children draw objects as well as count them in printed form.   Use pictures to add two numbers together as a group or in a bar.	4 + 3 = 7 10= 6 + 4 Calculations (number sentences) to be portrayed as **both** ___ + ___ = ___ & ___ = ___ + ___ throughout CPA stages.
Starting with the bigger amount/ number and counting on	 Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	12 + 5 = 17 Children both draw AND view things printed on page.  Start at the larger number on the bead line and count on in ones or in one jump to find the answer.	5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer. Also use numberlines. 
Crossing Tens and exchanging	 6 + 5 = 11   Start with the bigger amount and partition the smaller amount to make 10. Then add what's left.	 Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10.  9 + 5 = 14 	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?
Represent and use number bonds and fact families within 20 Look at inverse relationship with -	 2 more than 5. Show that adding is commutative	 	Emphasis should be on the language 1 more than 5 is equal to 6 1 more than 5 is 6 6 is 1 more than 5

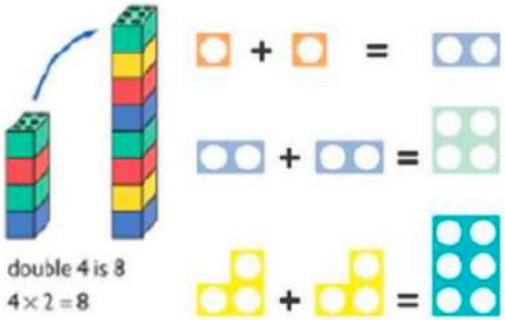
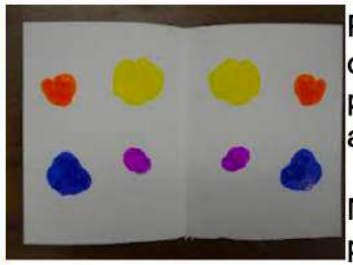
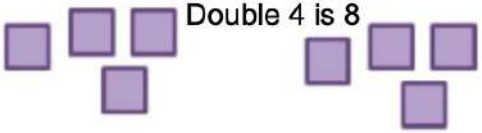
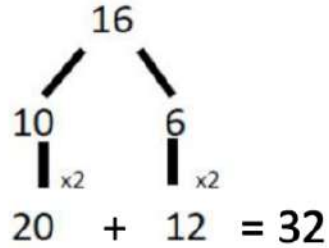
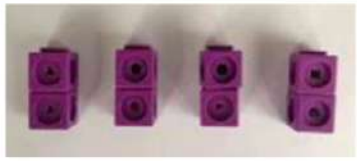
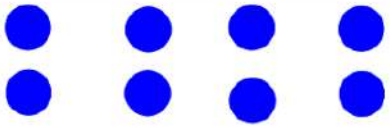
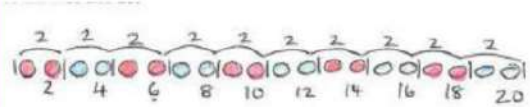
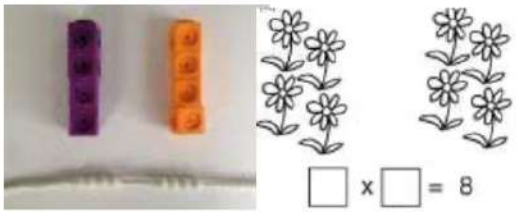
Y1 SUBTRACTION.

Objective & Strategy	Concrete	Pictorial	Abstract
Taking away/ subtracting ones.	Use physical objects, counters , cubes etc to show how objects can be taken away. 	 15 – 3 = 12 Cross out drawn objects to show what has been taken away.	7—4 = 3 3 = 7 - 4 16—9 = 7 9 = 16 - 7
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.	Put 13 in your head, count back 4. What number are you at?
Find the Difference	Compare objects and amounts  'Seven is 3 more than four' 'I am 2 years older than my sister'  Lay objects to represent bar model.	Count on using a number line to find the difference. 	Hannah has 5 sweets and her sister has3. How many more does Hannah have than her sister.? 5 - __ = 3

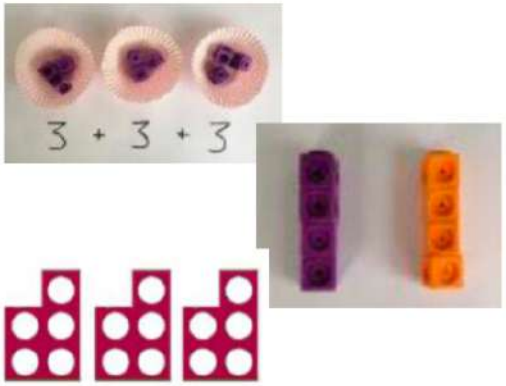
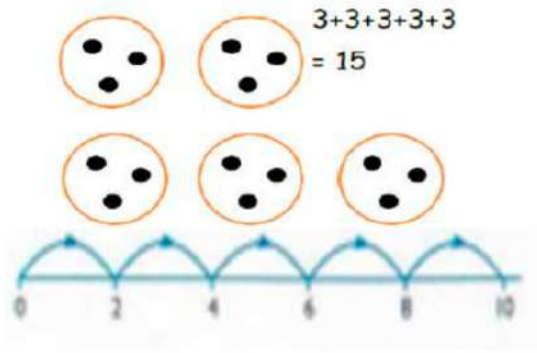
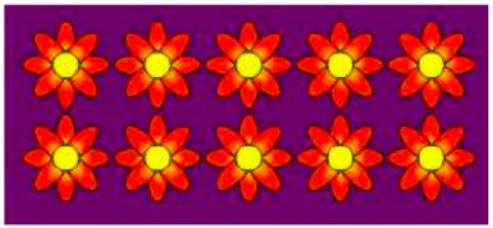
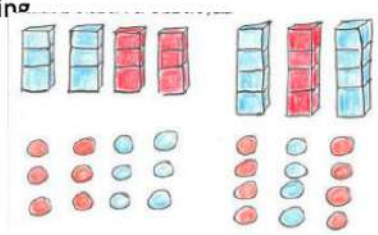
Y1 SUBTRACTION

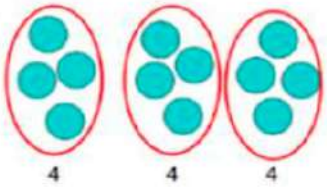
Objective & Strategy	Concrete	Pictorial	Abstract
Represent and use number bonds and related subtraction facts to 20	 Link to addition. Use concrete bar model to model the inverse. 	Show the bar model sideways or upside down too!  If 20 is the total and 6 is one of the parts, what is the missing part? 	If I have 14 gems and give 3 away, I will have a total of 11 gems. 
Crossing Ten	14—5  Make 14 on the ten frame. Take 4 away to make ten, then take one more away so that you have taken 5.	13—7  Jump back 3 first, then another 4. Use ten as the stopping point.	16—8 How many do we take off first to get to 10? How many left to take off?

Y1 MULTIPLICATION

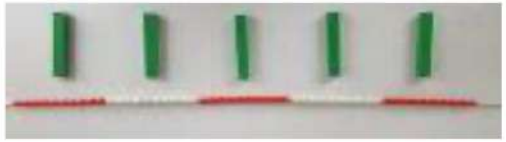
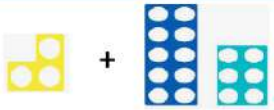
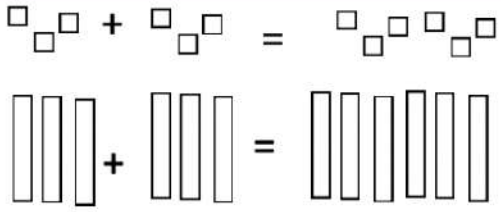
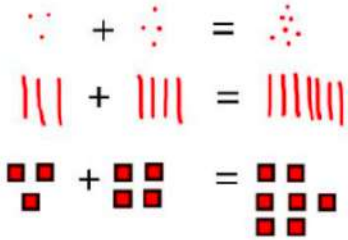
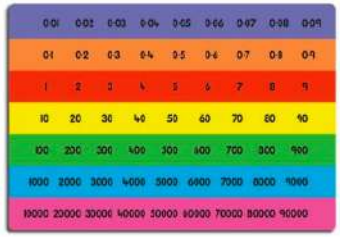
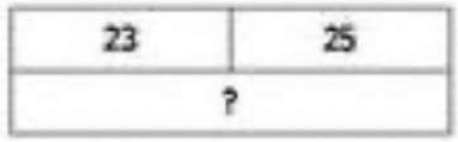
Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling 	 Paint an amount on a folded piece of paper and double it! Make predictions  Draw pictures to show how to double amounts	Partition a number and then double each part before recombining it back together.  (Revert to addition processes where necessary for recombining)
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 Number stick 5, 10, 15, 20, 25 , 30
Making equal groups and counting the total	 Use manipulatives to create equal groups.	Draw  to show 2 x 3 = 6 Draw and make representations	2 x 4 = 8 8 = 2 x 4 2 lots of 4 is equal to 8 2 groups of 4 makes a total of 8 8 is equal to two groups of 4

Y1 MULTIPLICATION

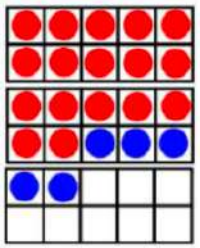
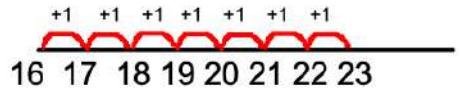
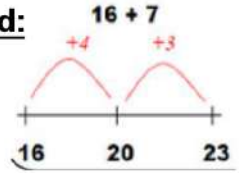
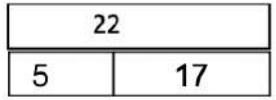
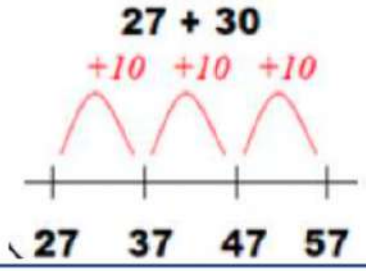
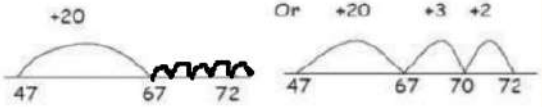
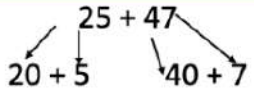
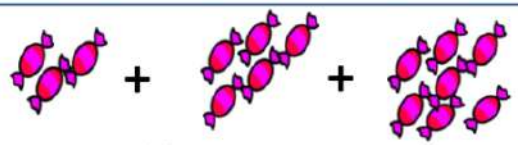
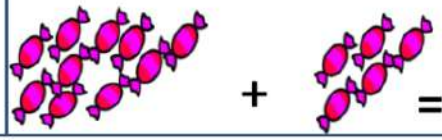
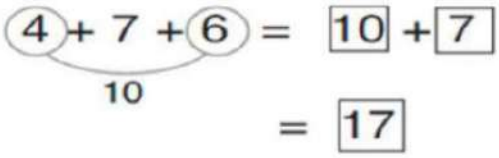
Objective & Strategy	Concrete	Pictorial	Abstract
Repeated addition	 Use different objects to add equal groups	Use pictorial including number lines to solve prob 	Write addition sentences to describe objects and pictures.  2 + 2 + 2 + 2 + 2 = 5 lots of 2 2 + 2 + 2 + 2 + 2 = 5 x 2
Using arrays	Use objects 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

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing *'Dividing' to be used interchangeably with the term 'sharing'	  Ten shared into 2 amounts	Children use pictures or shapes to share quantities.  8 shared between 4 is 2 Sharing:  4 4 4 12 shared between 3 is 4	12 shared between 3 is 4 12 ÷ 3 = 4

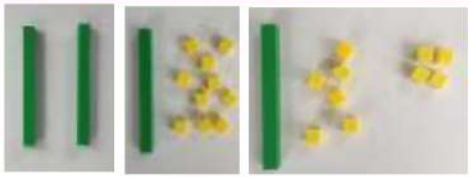
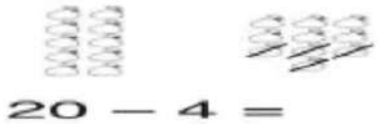
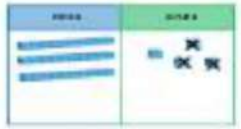
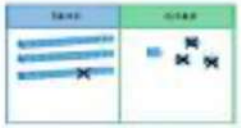
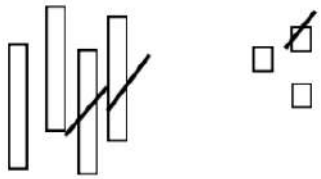
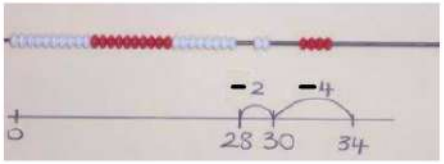
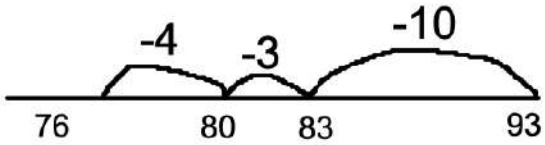
Y2 ADDITION +

Objective & Strategy	Concrete	Pictorial	Abstract
Adding multiples of ten	50= 30 = 20  Model using dienes and bead strings	 3 tens + 5 tens = _____ tens 30 + 50 = _____ Use representations for base ten.	20 + 30 = 50 70 = 50 + 20 40 + □ = 60
Use known number facts Build on Bonds within 20	  Children explore ways of making numbers within 20	 Chn draw own bar models to represent e.g. w/ apples □ + □ = 20 20 − □ = □ □ + □ = 20 20 − □ = □	□ + 1 = 16 16 − 1 = □ 1 + □ = 16 16 − □ = 1
Using known facts		 Children draw representations of H,T and O	3 + 4 = 7 *leads to* 30 + 40 = 70 *leads to* 300 + 400 = 700 
Bar model	 3 + 4 = 7	 7 + 3 = 10	 23 + 25 = 48

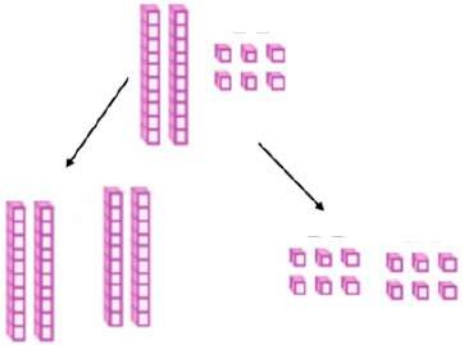
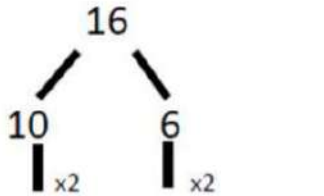
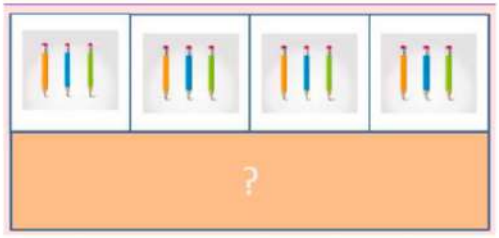
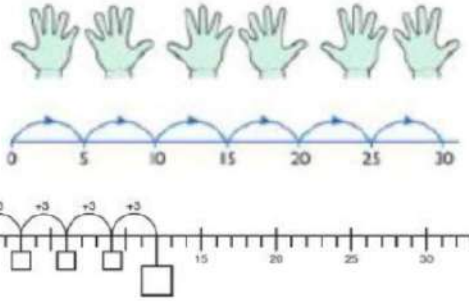
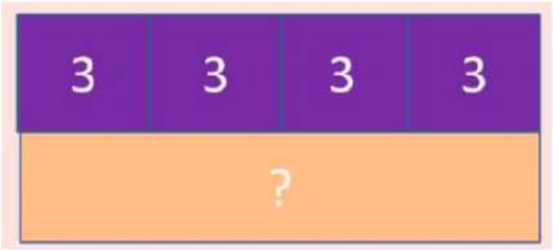
Y2 ADDITION +

Objective & Strategy	Concrete	Pictorial	Abstract
Add a two digit number and ones (Crossing and not)	 Use tens frame to make 'next' Ten Children explore the pattern. 17 + 5 = 22 27 + 5 = 32 18 + 5 = 18 + 2 + 3  Lay Numicon on top of these	**1st:**  **2nd:**  	17 + 5 = 22 Explore related facts 17 + 5 = 22 5 + 17 = 22 22—17 = 5 22—5 = 17 
Add a 2 digit number and tens (Crossing and not)	 25 + 10 = 35 Explore that the ones digit does not change	 	27 + 10 = 37 27 + 20 = 47 27 + □ = 57 
Add two 2-digit numbers (Crossing and not)	 20 + 40 = 60 5 + 7 = 12 60 + 12 = 72 Model using Numberline, Dienes and Numicon	 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 (Crossing and not)	Model using Numberline, Dienes and Numicon  Combine to make 10 first if possible, or bridge 10 then add third amount	 Regroup and draw representation.  	 Combine the two numbers that make/ bridge ten then add on the third.

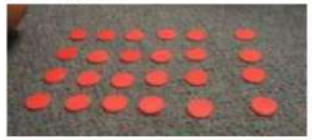
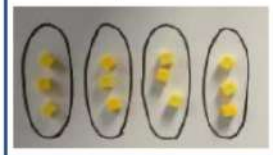
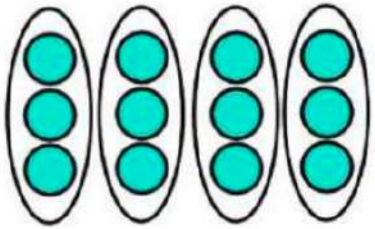
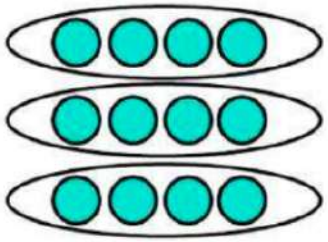
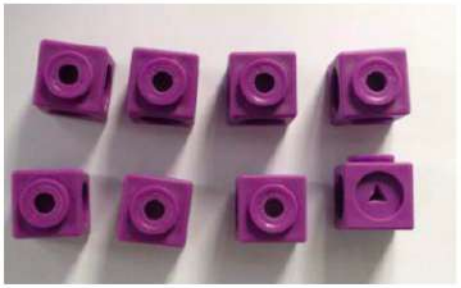
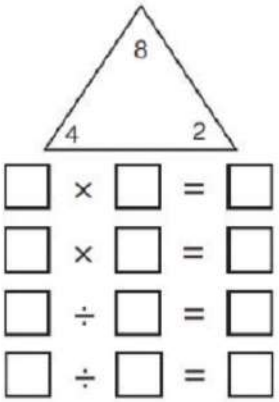
Y2 SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Exchanging a Ten into 10 Ones	 Use a PV chart to show how to change a ten into ten ones, use the term 'take and make'		20—4 = 16
Partitioning to subtract without exchanging	34—13 = 21   Use Dienes to show how to partition the number when subtracting without regrouping. 	Children draw representations of Dienes and cross off.  43—21 = 22	43—21 = 22
Make ten strategy *Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.*	 34—6 Use a beadstring and line to model counting down to the next Ten and then subtracting the rest.	 Using numberlines, begin at the right and subtract Tens first, then remaining ones, partitioning these IF need be.	93 - 17 = 76

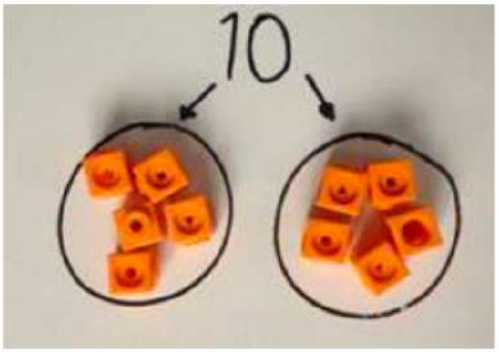
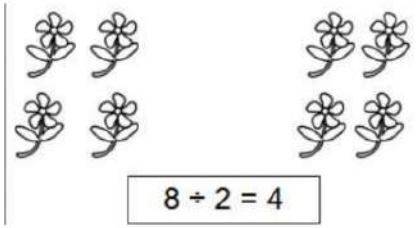
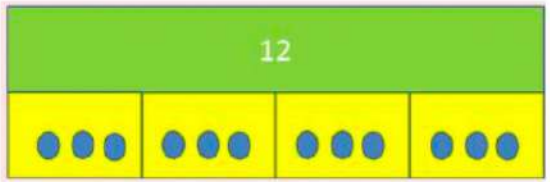
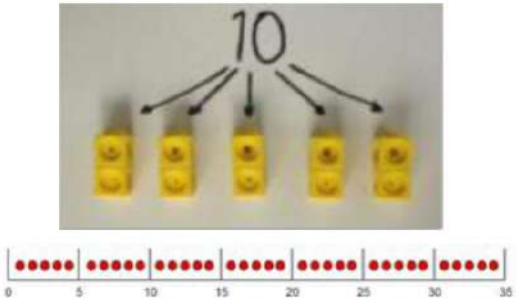
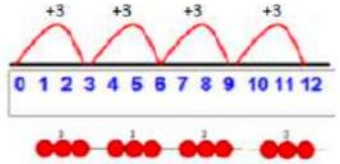
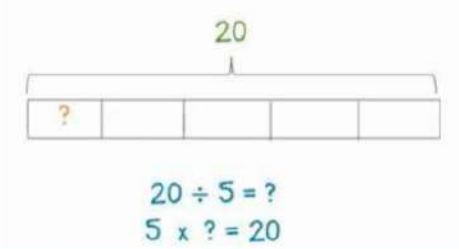
Y2 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling Link doubling to x2	Model doubling using dienes and PV counters.  40 + 12 = 52	Draw pictures and representations to show how to double numbers	Partition a number and then double each part before recombining it back together.  20 + 12 = 32
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. Use bar models.  5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40   	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 $4 \times 3 = \square$

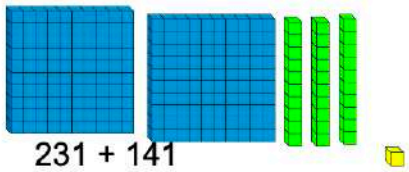
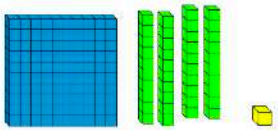
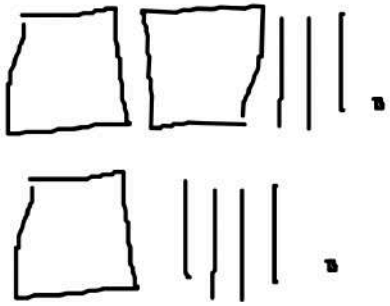
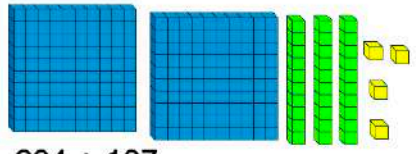
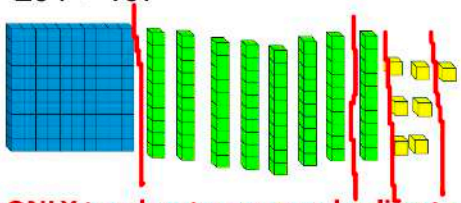
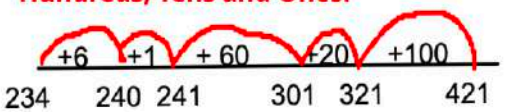
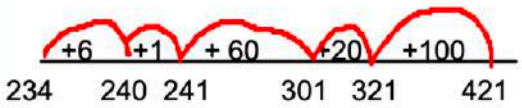
Y2 MULTIPLICATION X

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplication is commutative Refer to as 'multiplied by' as opposed to 'times'	Create arrays using counters and cubes and Numicon.    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.*	 2 x 4 = 8 ÷ 2		2 x 4 = 8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 8 = 2 x 4 8 = 4 x 2 2 = 8 ÷ 4 4 = 8÷ 2 Show all 8 related fact family sentences.

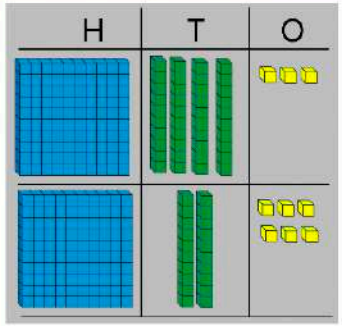
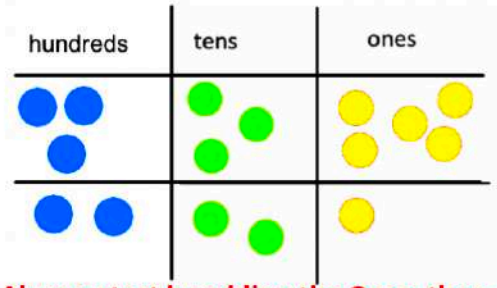
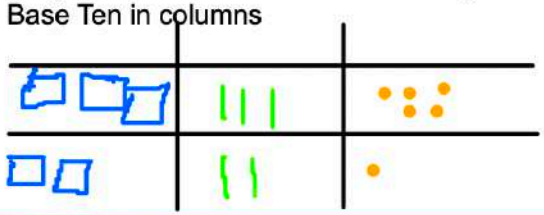
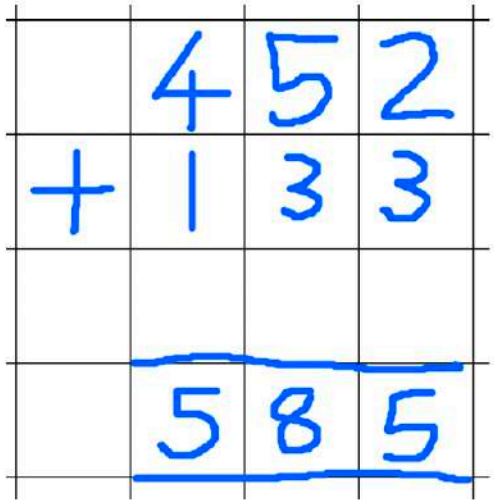
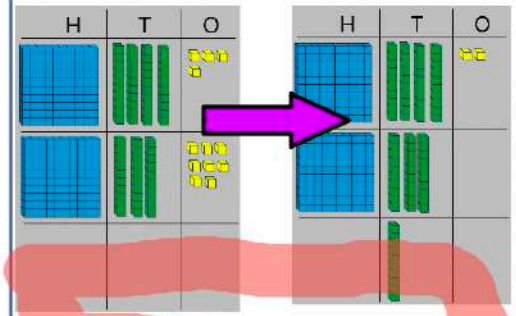
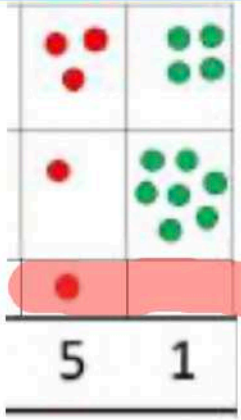
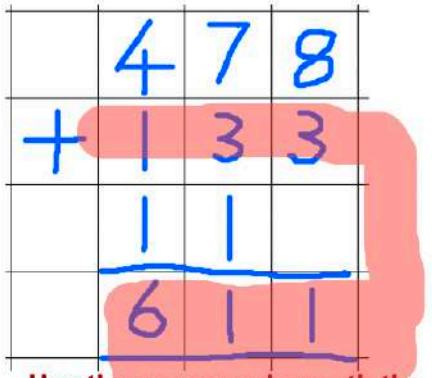
Y2 DIVISION ÷

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	 I have 10 cubes, can you share them equally in 2 groups? Ten divided by 2 is equal to 5.	Children use pictures or shapes to share quantities.  8 ÷ 2 = 4 Children use bar modelling to show and support understanding.  12 ÷ 4 = 3	12 ÷ 3 = 4
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.  Ten divided by 2 is equal to 5.	Use number lines for grouping  12 ÷ 3 = 4 Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. 	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

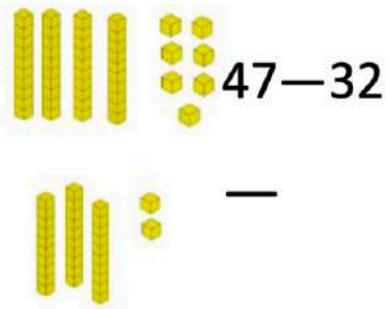
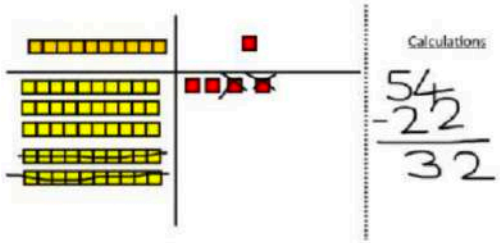
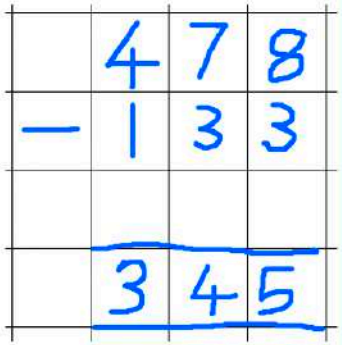
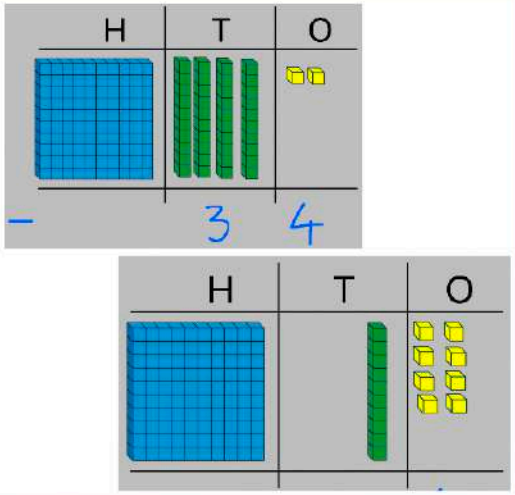
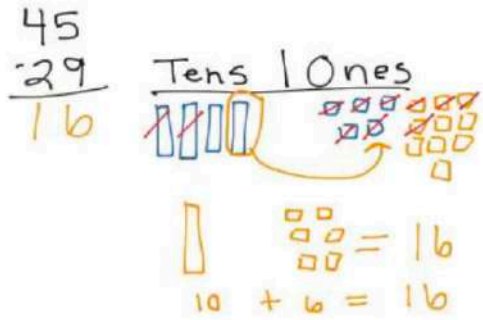
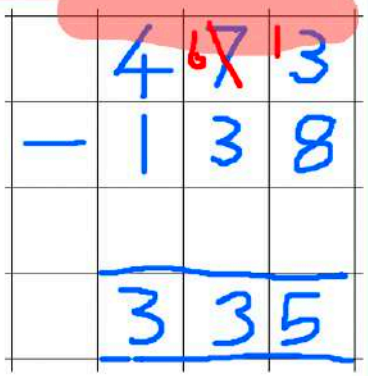
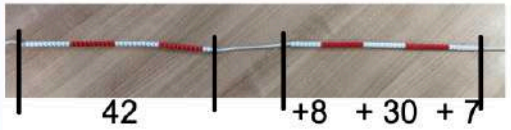
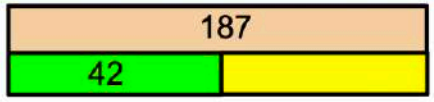
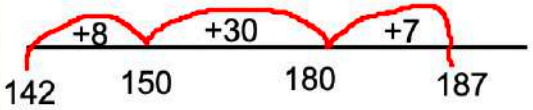
Y3 ADDITION +

Objective & Strategy	Concrete	Pictorial	Abstract
Addition - no exchanging Adding two or three 2 or 3 digit numbers	 231 + 141  **Always start by adding the Ones, then Tens, then Hundreds** Using Base Ten to add two or more numbers.	231 + 141  **Always start by adding the Ones, then Tens, then Hundreds** Drawing Base Ten representations to visualise adding numbers together.	2 3 1 + 1 4 1 1 + 1 30 + 40 200 + 100 Pupils identify adding together the Ones, the Tens and then the Hundreds and find the total. **Always start by adding the Ones, then Tens, then Hundreds** Writing out the amount of Ones, Tens and Hundreds
Addition - no exchanging Adding two or three 2 or 3 digit numbers	 234 + 187  **ONLY teacher to use numberline to represent pupil's adding with the Hundreds, Tens and Ones.**  Using Base Ten to add two or more numbers.	234 + 187  Use drawings to of Base Ten resources. **ONLY teacher to use numberline to represent pupil's adding with the Hundreds, Tens and Ones.**  	2 3 4 + 1 8 7 4 + 6 + 1 30 + 70 + 10 200 + 100 Pupils identify adding enough Ones to create the next Ten, then the rest of the Ones, then enough Tens to make the next Hundred, then the rest of the Tens, and finally the Hundreds.

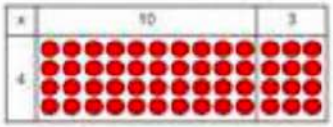
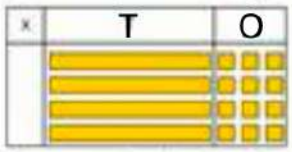
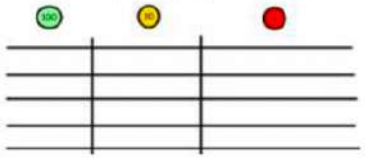
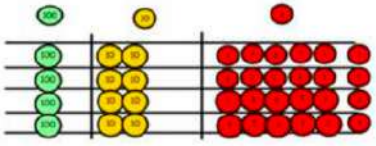
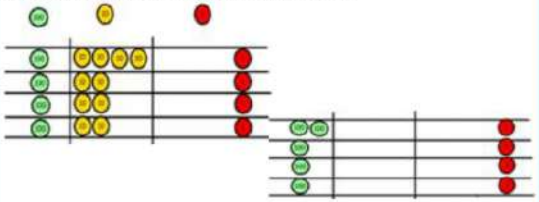
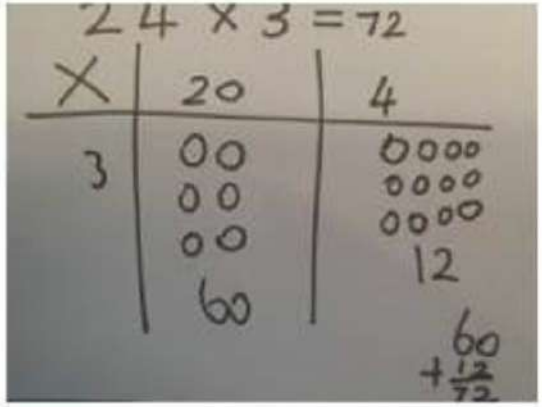
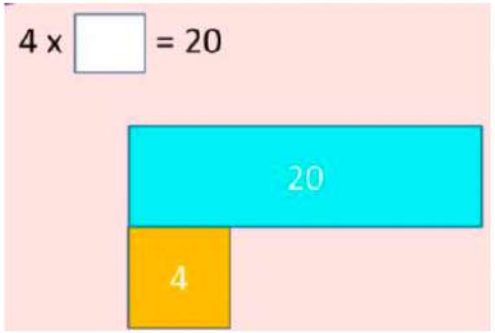
Y3 ADDITION +

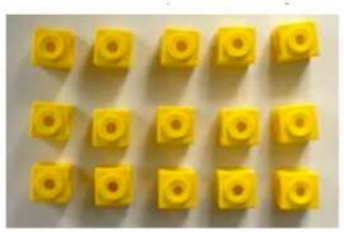
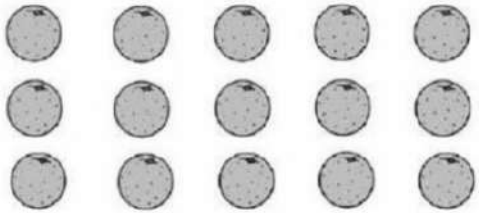
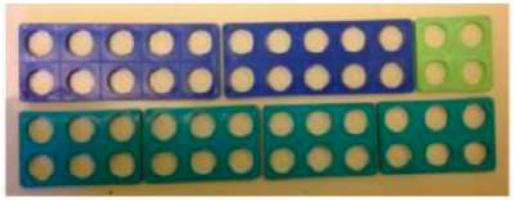
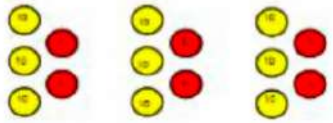
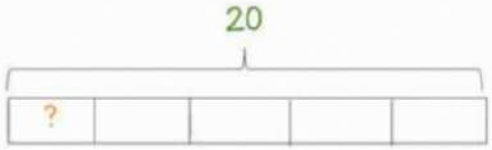
Objective & Strategy	Concrete	Pictorial	Abstract
Column Addition - no exchanging Adding two or three 2 or 3 digit numbers	 **Always start by adding the Ones, then Tens, then Hundreds** Build 2 numbers out of Base Ten so that the Hundreds, Tens and Ones are vertically alligned.	Children move to drawing the counters using a tens and one frame.  **Always start by adding the Ones, then Tens, then Hundreds** They can also do this but with drawing the Base Ten in columns 	 **Always start by adding the Ones, then Tens, then Hundreds**
Column Addition with exchanging	 **Leave this space free for recording extra Tens/Hundreds made** Build 2 numbers out of Base Ten so that the Hundreds, Tens and Ones are vertically alligned. **Always start by adding the Ones, then Tens, then Hundreds**	 Children can draw a representation of the grid to further support their understanding, exchanging the ten beaneath the calculation. **Leave this space free for recording extra Tens/Hundreds made** **Always start by adding the Ones, then Tens, then Hundreds**	 **Use the space underneath the calculation to record any extra Tens/ Hundreds that are made by an exchange** **Always start by adding the Ones, then Tens, then Hundreds**

Y3 SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction no exchanging	 Use base 10 to model	 Darw representations to support understanding	
Column subtraction with exchanging		 Children may draw base ten or PV counters and cross off.	Record any exchange of Hundreds/ Tens up here for subtraction. 
Finding the difference between two amounts (by counting up) Chn to be taught that subtracting is finding the difference	187-42  87 beads on the bead string. Find the first 43. How much is left to make the rest of the 87?	187-42  	187 - 42 142 + 8 = 150 150 + 30 = 180 180 + 7 = 187 8 + 30 + 7 = 45

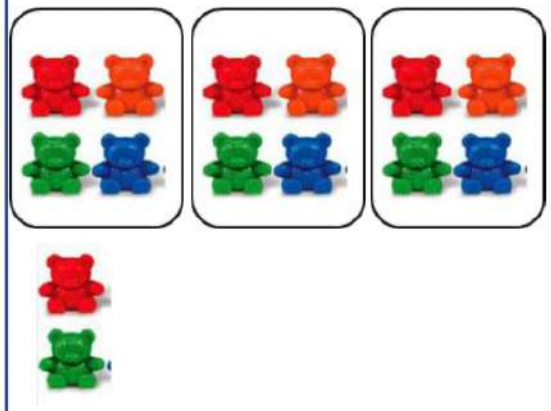
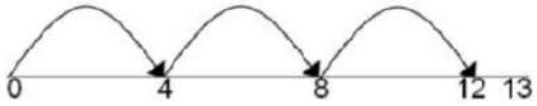
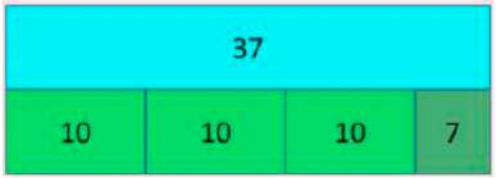
Y3 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Grid method (Recapping using arrays to introduce when needed)	Show the links with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3 Move onto base ten to move towards a more compact method.  4 rows of 13 Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows  Calculations 4 x 126 Fill each row with 126  Calculations 4 x 126 Add up each column, starting with the ones making any exchanges needed  Then you have your answer.	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.  Bar model are used to explore missing numbers  4 x ☐ = 20 20 4	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. | × | 30 | 5 | |---|---|---| | 7 | 210 | 35 | **210 + 35 = 245** Moving forward, multiply by a 2 digit number showing the different rows within the grid method. | | 10 | 8 | |---|---|---| | 10 | 100 | 80 | | 3 | 30 | 24 |

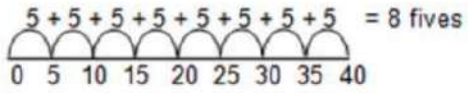
Objective & Strategy	Concrete	Pictorial	Abstract
Division with arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	Draw an array and use lines to split the array into groups to make multiplication 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
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding.  24 divided into groups of 6 = 4 96 ÷ 3 = 32 	Continue to use bar modelling to aid solving division problems.  20 ÷ 5 = ? 5 x ? = 20	How many groups of 6 in 24? 24 ÷ 6 = 4

Y3 DIVISION ÷

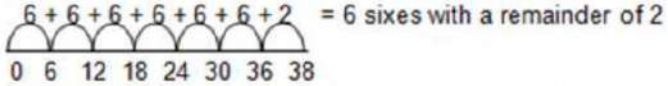
Y3 DIVISION ÷

Objective & Strategy	Concrete	Pictorial	Abstract
Division with remainders.	14 ÷ 3 = Divide objects between groups and see how much is left over 	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.  Use bar models to show division with remainders.  	Complete written divisions and show the remainder using r.  This vocab isn't used until UKS2 but can be a useful reference if appropriate for teacher and/or pupil

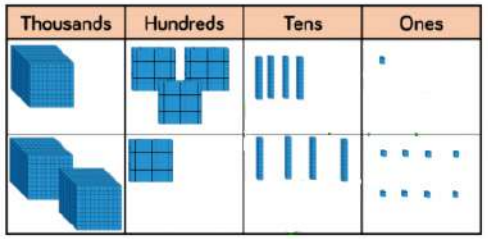
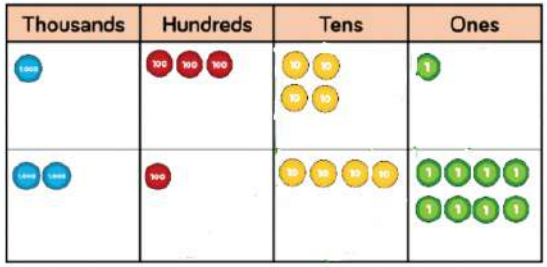
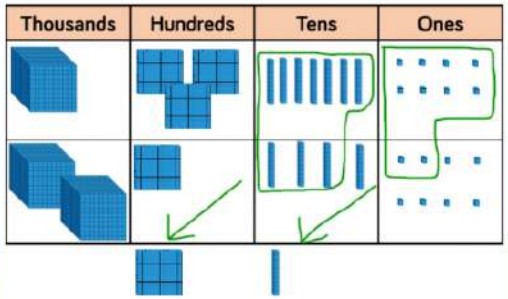
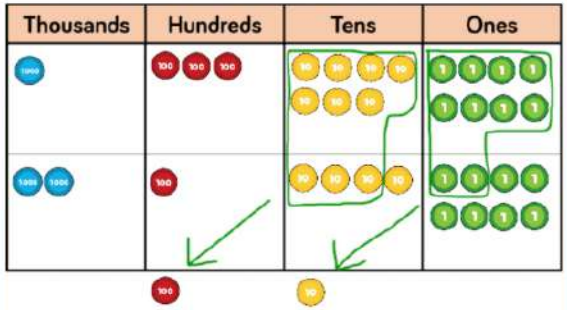
Example without remainder:
40 ÷ 5
Ask "How many 5s in 40?"



Example with remainder:
38 ÷ 6



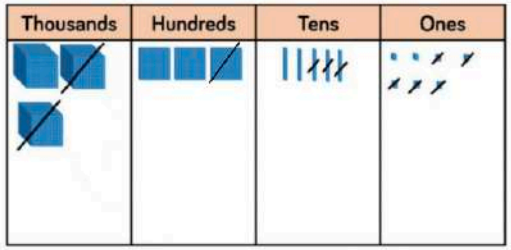
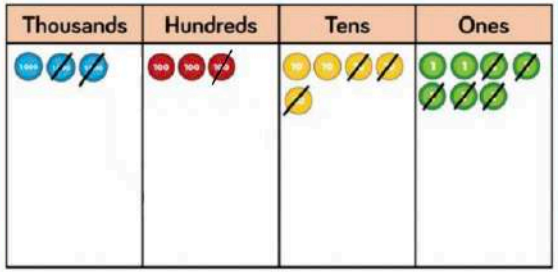
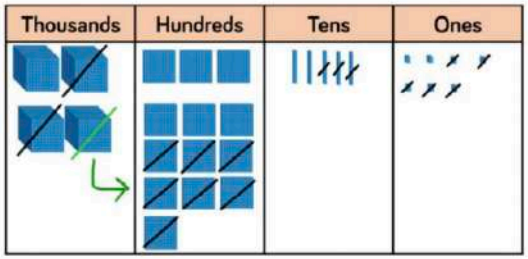
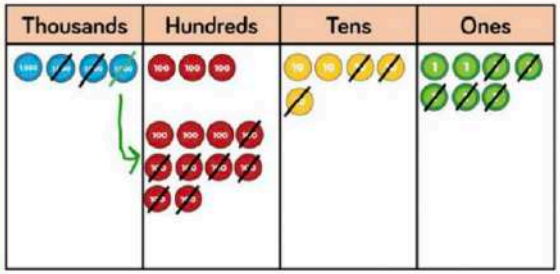
For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts.

Objective & Strategy	Concrete	Pictorial	Abstract
Column addition (no exchange)	 1341 + 2148 BECOMES 1341 + 2148	 1341 + 2148 BECOMES 1341 + 2148 Chn can also represent with their own drawings	1341 + 2148 3489 Start by adding the Ones columns, progress to Tens, Hundreds, Thousands
Column addition (exchange)	 1378 + 2148 BECOMES 1378 + 2148	 1378 + 2148 BECOMES 1378 + 2148 Chn can also represent with their own drawings	1378 + 2148 3526 Start by adding the Ones columns, progress to Tens, Hundreds, Thousands

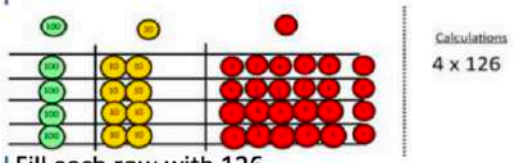
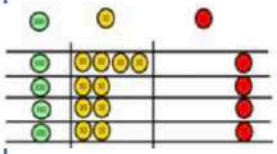
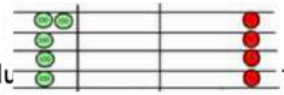
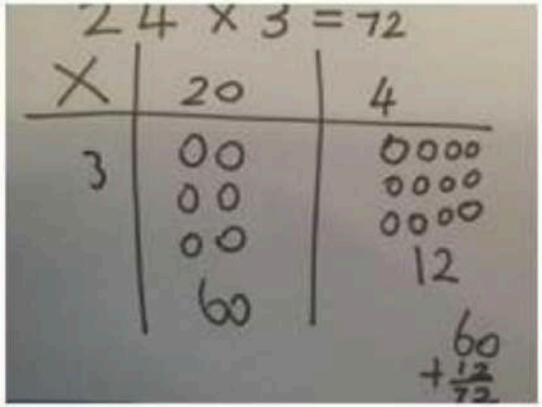
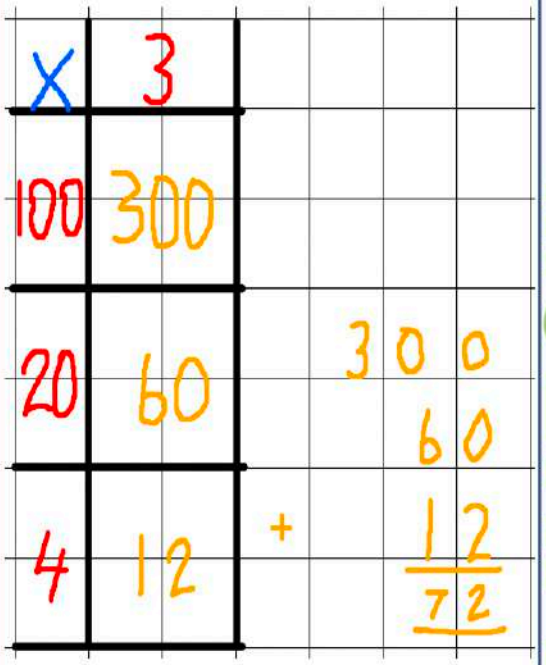
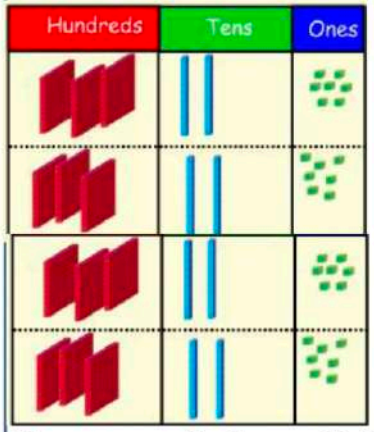
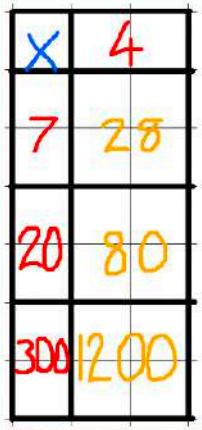
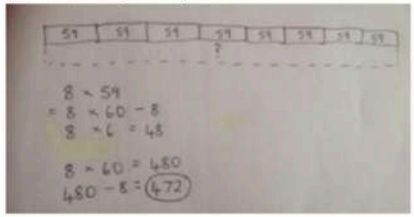
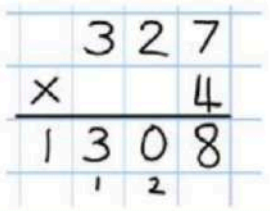
Y4-6

ADDITION +

Y4-6 SUBTRACTION -

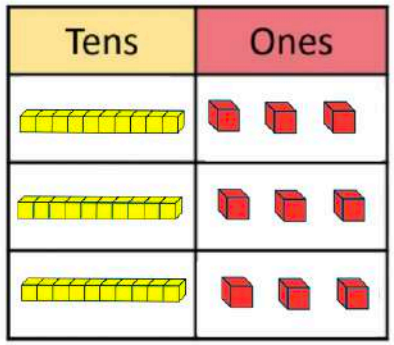
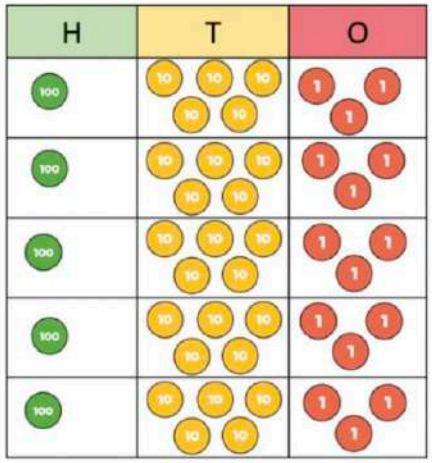
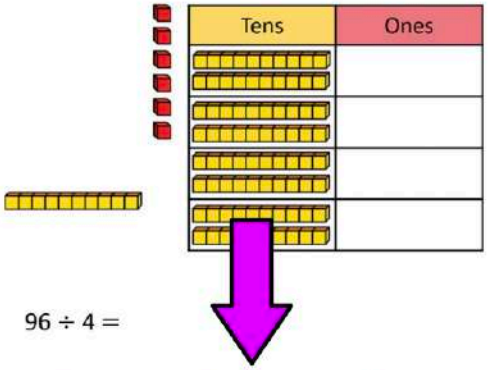
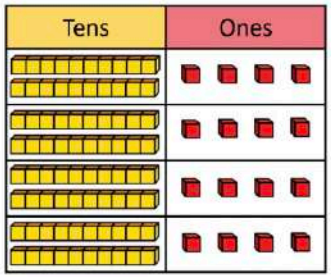
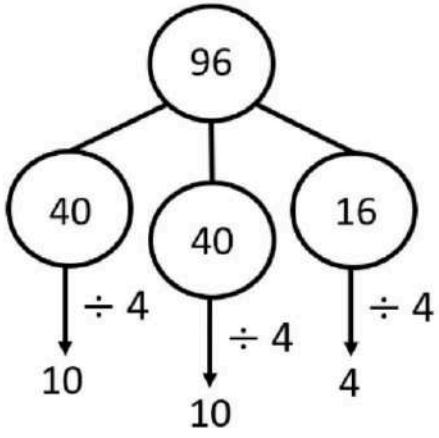
Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction up to 4 digits (no exchange)	 3357 - 2135 BECOMES 3357 - 2135	 3357 - 2135 BECOMES 3357 - 2135 Chn can also represent with their own drawings	3357 - 2135 1222 Start by subtracting the Ones columns, progress to Tens, Hundreds, Thousands
Column subtraction up to 4 digits (exchange)	 4357 - 2735 = 1622 BECOMES 4357 - 2735	 4357 - 2735 = 1622 BECOMES 4357 - 2735 Chn can also represent with their own drawings	3 1 4357 - 2735 1622 Start by subtracting the Ones columns, progress to Tens, Hundreds, Thousands

Y4-6 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	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  Calculations 4 x 126 Fill each row with 126   Add up each colu…nes 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.  	
Column multiplication	Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642  It is important at this stage that they always multiply the ones first. The corresponding long multiplication is modelled alongside	 Grid may be used to show how this relates to formal written method. Bar models and number lines can support alongside formal written methods 	327 x 4 28 80 1200 1308  This may lead to a compact method.

Objective & Strategy	Concrete	Pictorial	Abstract
Long multiplication			137 x 23 = 411 + 2740 = 3150

Y5-6 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Dividing numbers (no exchange)	 39 ÷ 3		39 ÷ 3 = 13  Number line used to prove and represent, not calculate (unless known how to count in 13s etc)
Dividing numbers (exchanging)	96 ÷ 4 =  96 ÷ 4 = 	Draw the table and populate it with Hundreds, Tens and Ones. Cross out any that need exchanging as you would do similarly when at the Concrete stage.	96 ÷ 4 =  10 + 10 + 4 = 24

Objective & Strategy	Concrete	Pictorial	Abstract
Short division (known as bus shelter method)			432 ÷ 5 becomes 8 6 r 2 5 ⟌ 4 3 2 3 Answer: 86 remainder 2
Long division			432 ÷ 15 becomes 2 8 · 8 1 5 ⟌ 4 3 2 · 0 3 0 ↓ 1 3 2 1 2 0 1 2 0 1 2 0 0