Deanshanger Primary School
Calculation Policy

This policy has been largely adapted from the Cliffe VC Primary School Calculation Policy with further material added for EYFS. It is a working document and will be revised and amended as necessary.

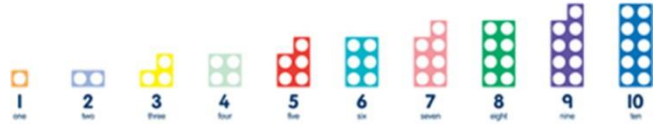
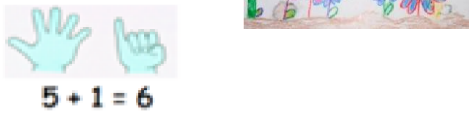
Reviewed and updated with whole staff input, January 2019

Calculation in EYFS at Deanshanger Primary School

Formal written recording will not usually be expected or appropriate in this Stage and worksheets for children to complete will not have a place. However, 'teachers may demonstrate methods of recording, using standard notation where appropriate, and children may be encouraged to record what they have done. E.g. by drawing or tallying' (from EYFS Practice Guidance)

Addition.

Learning Objectives. (Early Learning goals identified in bold blue type).	Activities.	Key Vocabulary.
• Use language such as 'more' or 'less' to compare two numbers • Find one more or one less than a number from 1 to 10 • Select two groups of objects to make a given total of objects • Begin to relate addition to combining two sets of objects and subtraction to taking away • In practical activities and discussion begin to use the vocabulary involved in adding and subtracting • Describe solutions to practical problems, drawing on experience, talking about their own ideas, methods and choices • Use developing mathematical ideas and methods to solve practical problems.	• The balance between learning and teaching indoors and outdoors (e.g. having read a story about washing clothes, there might be laundrette play indoors and washing line play outdoors; streets of clothes shops built out of recyclables; bikes and other wheeled vehicles being used as delivery vans; numbered (and lettered) parking spaces. • Children's mathematical experiences will be based on real-life problems, for example: 'How many spoons do we need for everyone in this group to have one? ' . e.g. who has more Lego wheels? 'I'm older than you – you are 4'. Are there more pieces of apple for snack time or banana? How many animals are in the farmer's field – we could have 3 sheep and 2 cows, 4 sheep and 1 cow. etc • Children will be encouraged to compare quantities and numbers through games such as skittles, sometimes keeping the score after each turn. • Songs and rhymes will be used to calculate 'how many now?' (one more or one less) - One man went to mow, 5 little speckled frogs etc. • Practitioners will model with real objects or children to act out to help embed understanding and mental imagery. • Appropriate use of Interactive Whiteboards / I Pads as a substitute for manipulation of real objects.	add more and make sum total altogether score double one more, two more, ten more ... how many more to make...? how many more is...than...?

	• Dice games using two dice so that children need to find totals encourage talk about more/ fewer. • Children will manipulate number cards and 'washing line' numbers and quantities, e.g. bags holding 1, 2, 3, 4, 5 items. • Numicon shapes will introduced and will be used to: identify 1 more/less, combine pieces to add, find number bonds, add without counting. Children can record this by printing or drawing around Numicon pieces.  • Children will be encouraged to represent their ideas and workings in a variety of ways including: pictures, with objects, using their fingers, with a number line etc.    1 2 3 4 5 6 • Children will be encouraged to solve simple problems using manipulatives including their fingers and number tracks, to count up, on and to find one/more...	

Subtraction.

Learning Objectives. (Early Learning goals identified in bold blue type).	Activities.	Key Vocabulary.
• Begin to relate addition to combining two sets of objects and subtraction to taking away • In practical activities and discussion begin to use the vocabulary involved in adding and subtracting • Describe solutions to practical problems, drawing on experience, talking about their own ideas, methods and choices • Use developing mathematical ideas and methods to solve practical problems	• Children will be encouraged to read sentences aloud in different ways "five subtract one leaves four", "four is the same as five subtract one" • Practical, authentic experiences will be used such as: "There should be 4 cups in the home corner – how many have we lost?" • Children make a record in pictures, words or symbols of subtraction activities.   • Role-play experiences will be used to spend money from a fixed amount, e.g. 10p, and count/ calculate how much is left? Is there enough to buy anything else? • Play dice games, skittles... • Songs, rhymes and stories will be used to talk about how many are left, e.g. the Three Billy Goats Gruff, Ten Green bottles etc.  	take (away) leave how many are... left/left over? how many have gone? one less, two less...ten less... how many fewer is...than ...? difference between... is the same as...

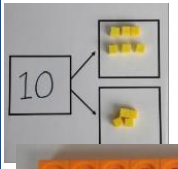
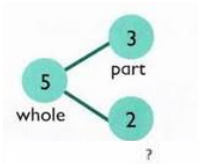
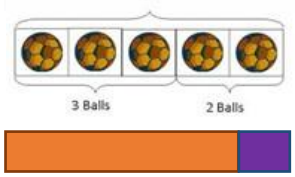
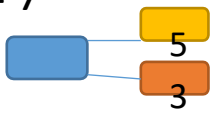
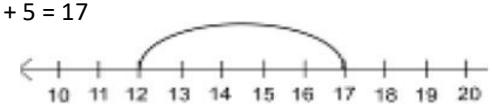
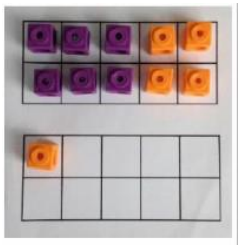
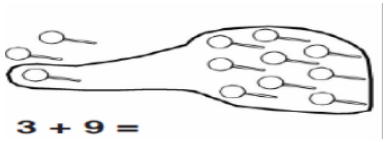
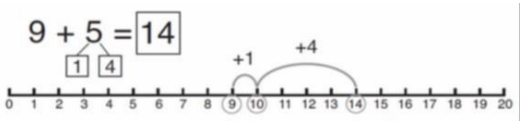
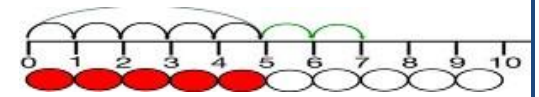
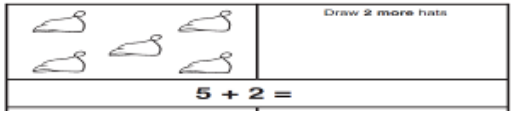
Multiplication.

Learning Objectives. (Early Learning goals identified in **bold blue type**).	Activities.	Key Vocabulary.
• Count aloud in ones, twos, fives and tens • Count repeated groups of the same size • Describe solutions to practical problems, drawing on experience, talking about own ideas, methods and choices. • **Use developing mathematical ideas and methods to solve practical problems**	• Introduce counting in groups, e.g. pairs of socks, squares of chocolate (broken into rows)  • Practise grouping items into same-size groups and explore quick ways to count them e.g. coins.   • Use numeral dice with 2, 4 and 6 to encourage children to take items in pairs. • Practise calculating and learning doubles, by manipulating real objects, e.g. two rows of 4 bananas, socks etc. and by using domino pairs etc.  • Practise counting aloud in 10's, 5's and 2's, looking at number squares and lines to notice number patterns.	lots of groups of times multiply multiplied by multiple of once, twice, three times...ten times .....times as (big, long, wide...and so on) repeated addition double

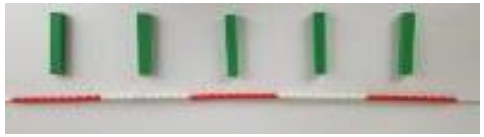
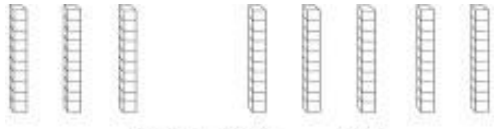
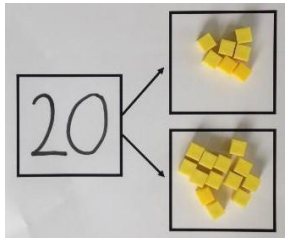
Division.

Learning Objectives. (Early Learning goals identified in bold blue type).	Activities.	Key Vocabulary.
• Share objects into equal groups and count how many in each group • Describe solutions to practical problems, drawing on experience, talking about their own ideas, methods and choices • **Use developing mathematical ideas and methods to solve practical problems.** • **Solve problems, including doubling halving and sharing.**	• Children need to see and hear representations of division as both grouping and sharing. • Division can be introduced through halving - real-life experiences will be used, e.g. sharing fairly pieces of fruit at snack time, sharing out cards before beginning a game of dominoes etc.  • Share cooking ingredients between the members of a group, e.g. squares of chocolate, marshmallows, pizza... Setting the problems in a real life context and solving them with concrete apparatus will support children's understanding - "I have got a whole pizza to share between two people. Can you cut the pizza in half?  • Share quantities of items into appropriate sized groups for practical purposes (e.g. Lego wheels into groups of 4) and talk about how many children will be able to have a set.	halve share, share equally one each, two each, three each... group in pairs, threes, tens equal groups of divide divided by divided into left, left over

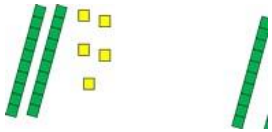
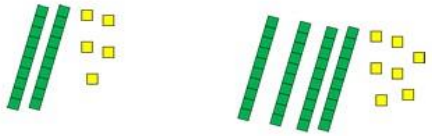
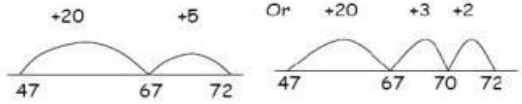
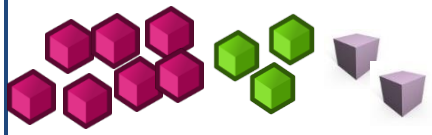
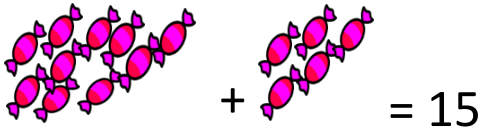
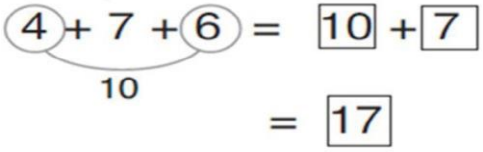
Y1 ADDITION

Objective & Strategy	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	    Use part part whole model. Use cubes to add two numbers together as a group or in a bar.	   Use pictures to add two numbers together as a group.	4 + 3 = 7  10= 6 + 4 Use the part-part whole diagram as shown above to move into the abstract.
Starting at the bigger 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  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	5 + 12 = 17 Circle the larger number and count on the smaller number to find your answer.
Regrouping to make 10. *This is an essential skill for column addition later.*	 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10. Use ten frames.	 Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10. 	7 + ☺ = 11 Missing number sentences If I am at seven, how many more do I need to make 11. How many more do I add on now?
Represent & use number bonds and related subtraction facts within 20	 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.'*

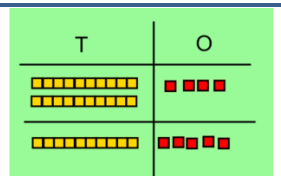
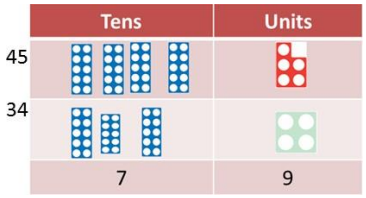
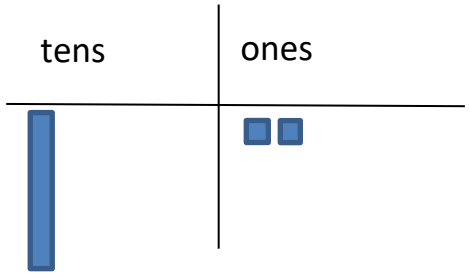
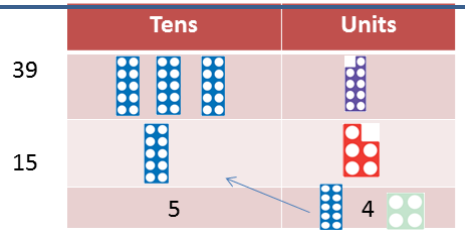
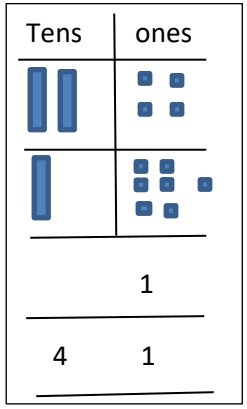
Y1 ADDITION +

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 Part part/whole	 Children explore ways of making numbers within 20 using a variety of manipulatives.		□ + 1 = 16 1 + □ = 16 16 – 1 = □ 16 – □ = 1
Using known facts	□□ + □□ = □□□ □□□ + □□ = □□□□□		3 + 4 =7 13 + 4 = 17 3 + 14 = 17 23 + 4 =27
	 3 + 4 = 7		

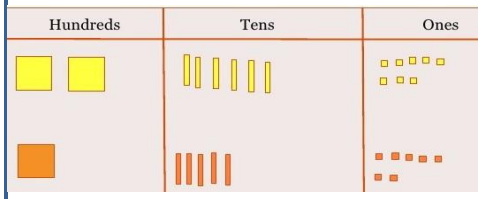
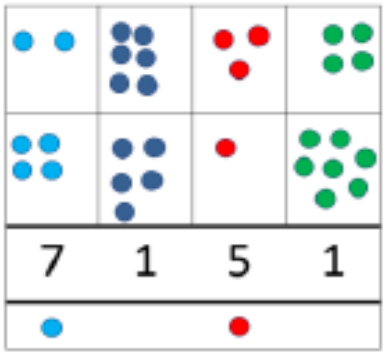
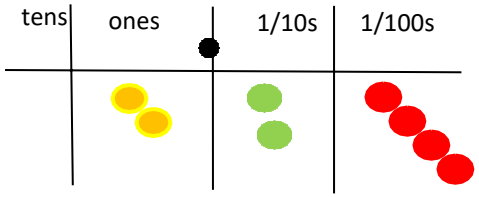
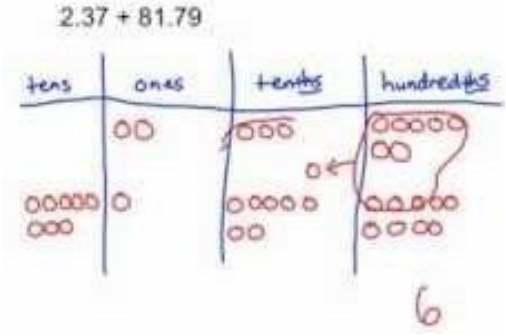
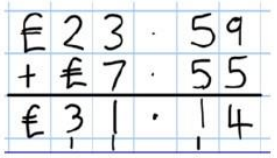
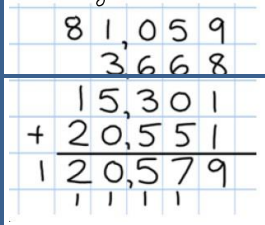
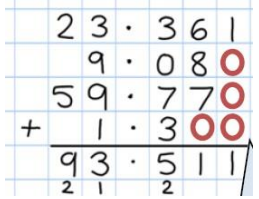
Y1 ADDITION +

Objective & Strategy	Concrete	Pictorial	Abstract
Add a 2 digit number and tens	 25 + 10 = 35 Explore that the ones digit does not change		27 + 10 = 37 27 + 20 = 47 27 + □ = 57
Add two 2-digit numbers	 Model using dienes, place value counters and numicon	 Use number line and bridge ten using part whole if necessary.	25 + 47 20 + 5 40 + 7 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.  = 15	 Combine the two numbers that make/ bridge ten then add on the third.

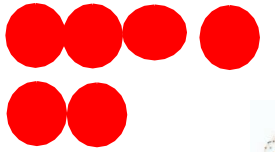
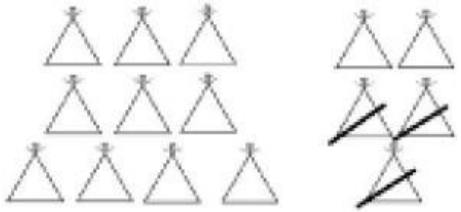
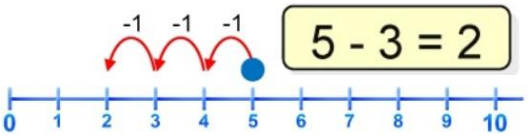
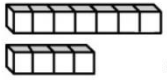
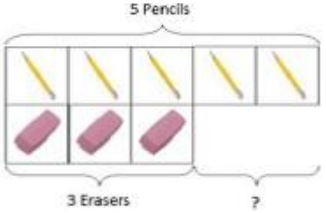
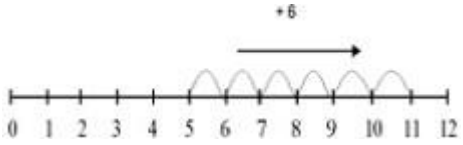
Y1 Y3 ADDITION +

Objective & Strategy	Concrete	Pictorial	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. 	Children move to drawing the tens and ones using a tens and one frame.  10 2 = 12	2 2 3 + 1 1 4 3 3 7 Add the ones first, then the tens, then the hundreds.
Column Addition with regrouping.	 Exchange ten ones for a ten. Model using numicon and diennes apparatus	 Children can draw a representation of the grid to further support their understanding, carrying the ten above the line – 'leave a space just in case'	20 + 5 40 + 8 60 + 13 = 73 Start by partitioning the numbers before formal column to show the exchange. 536 + 85 1 1 621

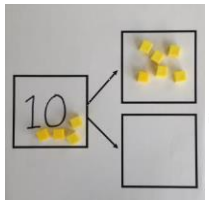
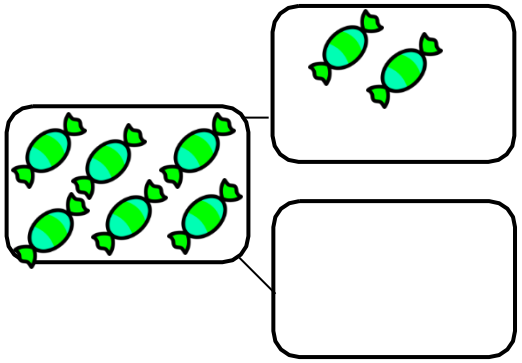
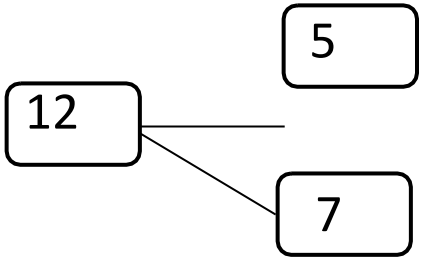
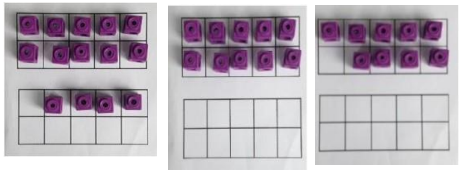
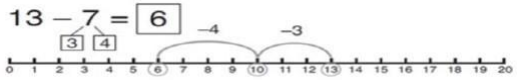
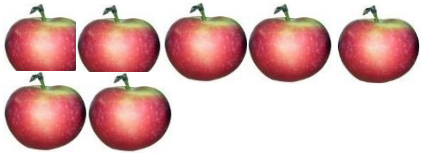
Y4-6 ADDITION

Objective &Strategy	Concrete	Pictorial	Abstract
Y4—add numbers with up to 4 digits	Children continue to use dienes where needed 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.	Continue from previous work to carry hundreds as well as tens. Relate to money and measures.
Y5—add numbers with more than 4 digits. Add decimals with 2 dec- imal places, including money.	As year 4  Introduce decimal place value counters and model exchange for addition.		72.8 + 54.6 127.4 1 1  Mainly abstract methods in Year 5. 
Y6—add several num- bers of increasing com- plexity Including adding money, measure and decimals with different numbers of decimal points.	As Y5	As Y5	Insert zeros for place holders. 

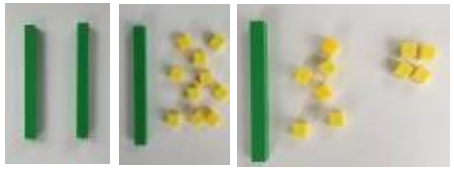
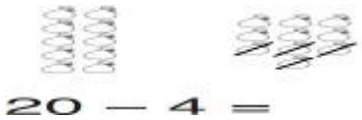
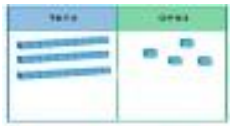
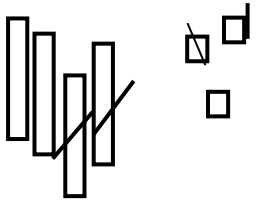
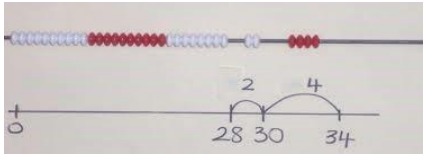
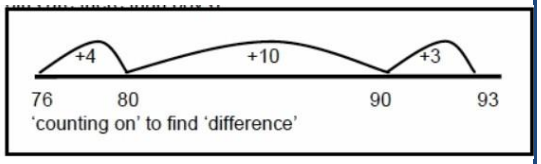
Y1 SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Taking away ones.	Use physical objects, counters , cubes etc to show how objects can be taken away.  6—4 = 2  4—2 = 2	 15 – 3 = 12 Cross out drawn objects to show what has been taken away.	7—4 = 3 16—9 = 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 12 sweets and her sister has 5. How many more does Hannah have than her sister?

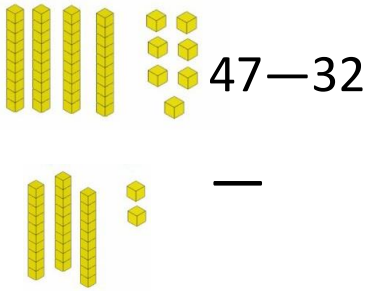
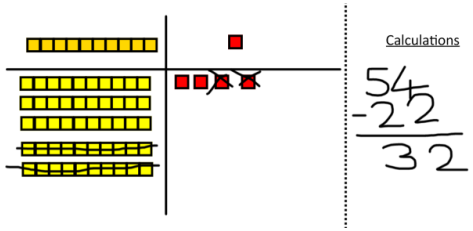
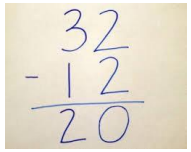
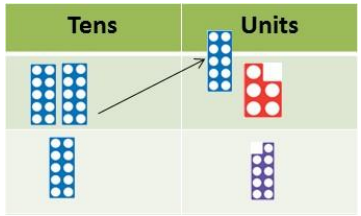
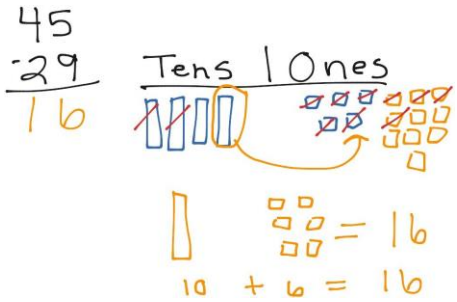
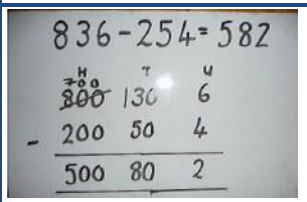
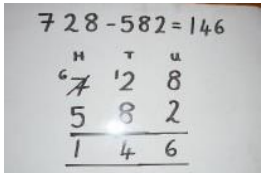
Y1 SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Represent and use number bonds and related subtraction facts within 20 Part Part/Whole model	 Link to addition. Use PPW model to model the inverse. If 10 is the whole and 6 is one of the arts, what's the other part? 10—6 = 4	 Use pictorial representations to show the part.	Move to using numbers within the part/whole model. 
Make 10	14—9  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?
Bar model	 5—2 = 3		10 = 8 + 2 10 = 2 + 8 10—2 = 8 10—8 = 2

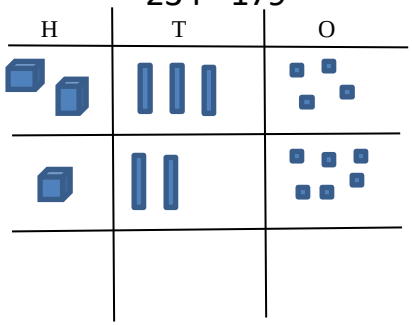
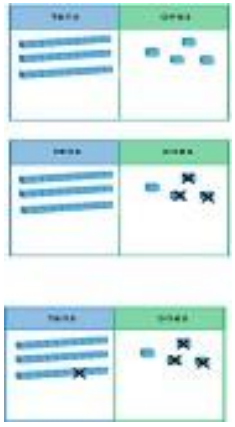
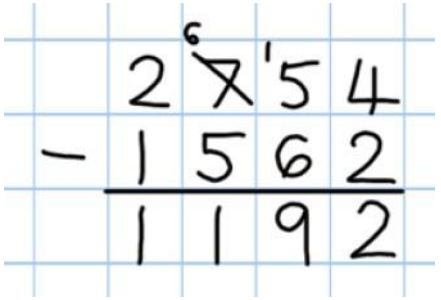
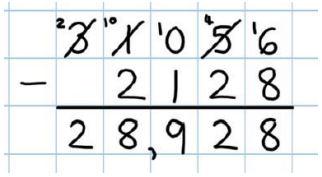
Y1 Y3 SUBTRACTION -

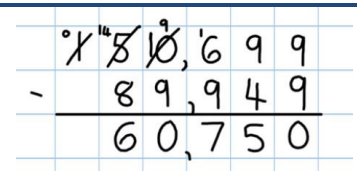
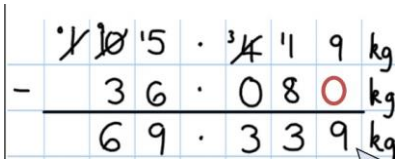
Objective & Strategy	Concrete	Pictorial	Abstract
Regroup a ten into ten ones	 Use a place value chart to show how to change a ten into ten ones, use the term 'take and make'		20—4 = 16
Partitioning to subtract without re-grouping.	34—13 = 21    Use Dienes to show how to partition the number when subtracting without regrouping.	Children draw representations of Dienes and cross off.  43 -21 =	43—21 = 22
Make ten strategy *Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.*	 34—28 Use a 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

Y1 Y3 SUBTRACTION -

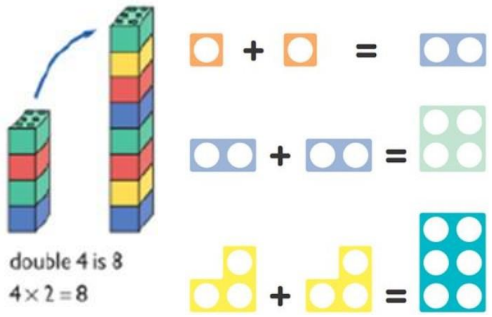
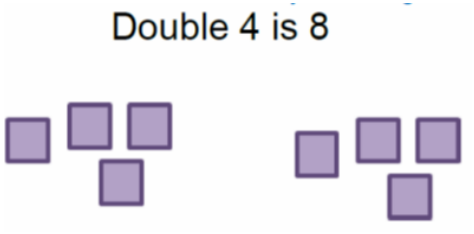
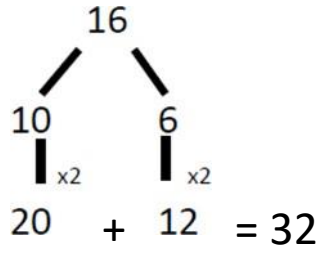
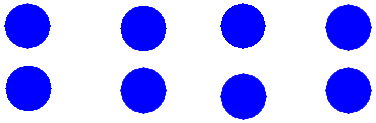
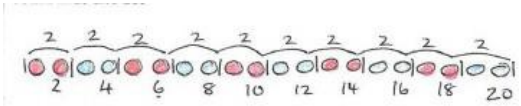
Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping (friendly numbers)	 Use Dienes or Numicon to model	 Draw representations to support understanding	$47-24=23$ $40+7$ $-\ 20+4$ $20+3$ Intermediate step may be needed to lead to clear subtraction understanding. 
Column subtraction with regrouping	 Begin with base 10 or Numicon. Move to Dienes modelling the exchange of a ten into ten ones. Use the phrase steal for exchange.	 Children may draw base ten and cross off.	 Begin by partitioning into place value columns  Then move to formal method.

Y4-6 Year SUBTRACTION -

Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones Year 4 subtract with up to 4 digits. *Introduce decimal subtraction through context of money*	234 - 179  Model process of exchange using Numicon, base ten and then move to Dienes	Children to draw Dienes counters and show their exchange—see Y3 	 Use the phrase 'steal' for exchange'.
Year 5- Subtract with at least 4 digits including money and measures. *Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal*	As Year 4	Children to draw Dienes apparatus and show their exchange—see Y3	 Use zeros for place-holders.

Year 6—Subtract with increasingly large and more complex numbers and decimal values.			 

Y1 – MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Use practical activities using manipultives including cubes and Numicon to demonstrate doubling 	Draw pictures to show how to double numbers 	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

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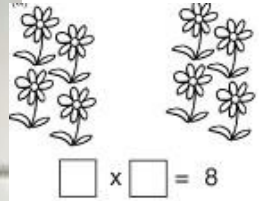
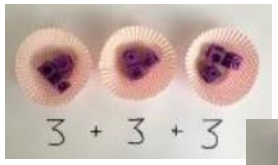
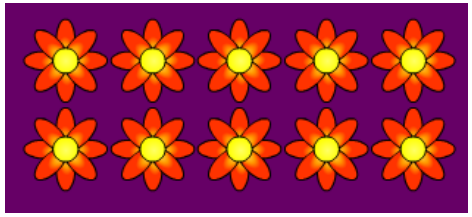
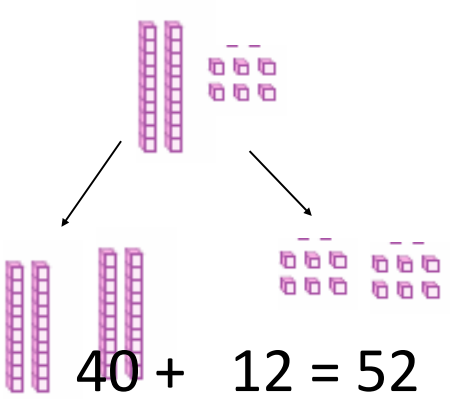
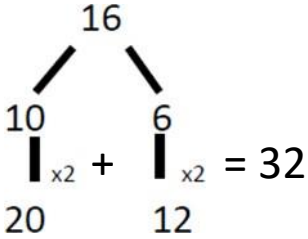
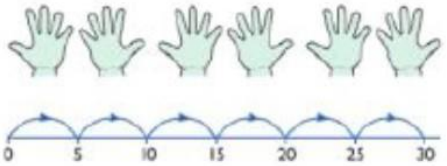
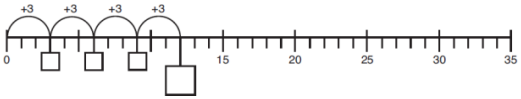
Making equal groups and counting the total	  Use manipulatives to create equal groups.	Draw  to show 2 x 3 = 6 Draw and make representations	2 x 4 = 8

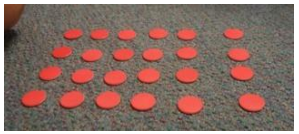
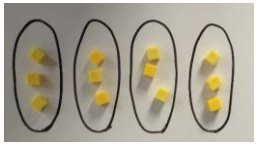
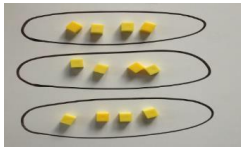
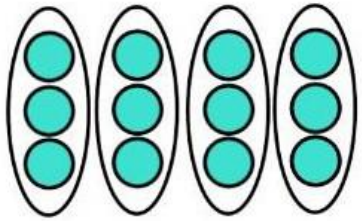
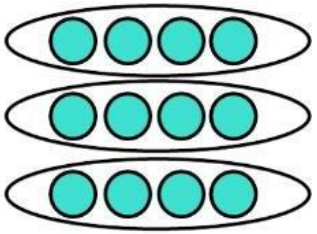
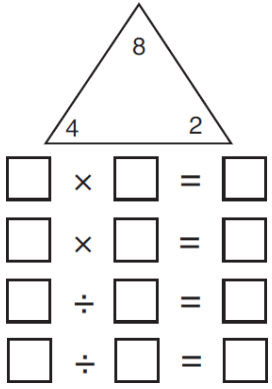
Y1 – MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Repeated addition	   Use different objects to add equal groups	Use pictorial including number lines to solve problems. lems There are 3 sweets in one bag. How many sweets are in 5 bags altogether?  3+3+3+3+3 = 15  	Write addition sentences to describe objects and pictures. 
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 under- standing	3 x 2 = 6 2 x 5 = 10

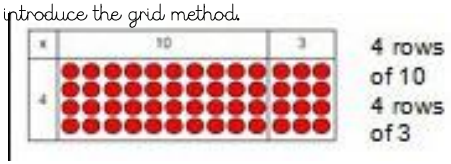
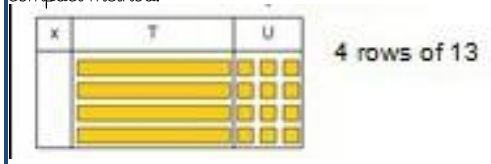
Y2 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Model doubling using Dienes.  	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.  5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40 	Number lines and counting sticks 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 $4 \times 3 = \square$

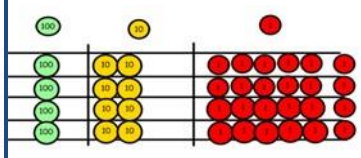
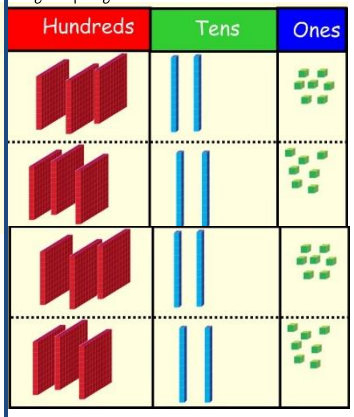
Y2 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplication is commutative	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 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 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.

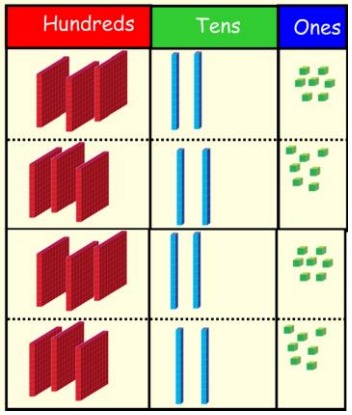
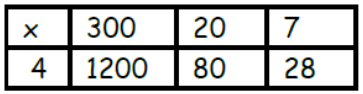
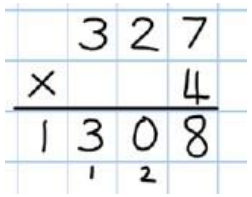
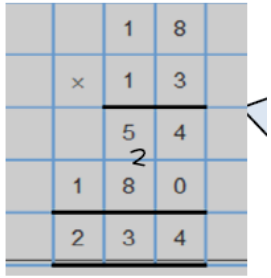
Y3 MULTIPLICATION

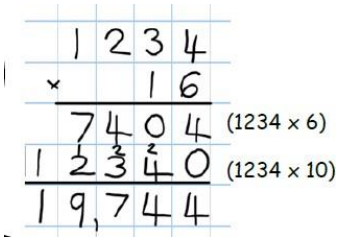
Objective & Strategy	Concrete	Pictorial	Abstract
Grid method	Show the links with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3 Move onto base ten to move towards a more compact method.  4 rows of 13	Children can represent their work by drawing Dienes rods and cubes in a way that they understand.	Grid method 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

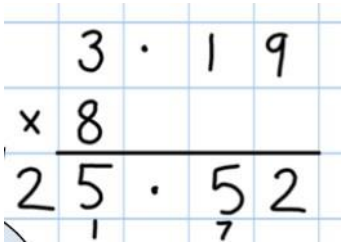
Y4 MULTIPLICATION

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 Dienes rods and cubes 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 column starting with the ones, tens then hundreds. 1,	Children can represent their work with Dienes rods in a way that they understand. They can draw the rods and cubes using colours to show different amounts or just use the rods and cubes in the different columns to show their thinking as shown below.	Start with multiplying one digit numbers and show clear addition next to the grid. | x | 30 | 5 | | 7 | 210 | 35 | 210 + 35 = 245
Column multiplication	Children can continue to be supported by Dienes apparatus at this 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	| x | 300 | 20 | 7 | | 4 | 1200 | 80 | 28 | The grid method maybe used to show how this relates to a formal written method.	327 x 4 28 80 1200 1308 This may lead to a compact method.

Y5-6 MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract
Column Multiplication for 3 and 4 digits x 1 digit.	 It is important at this stage that they always multiply the ones first. Children can continue to be supported by Dienes apparatus at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642		327 x 4 28 80 1200 1308  This will lead to a compact method.
Column multiplication	Manipulatives may still be used with the corresponding long multiplication modelled alongside.		 18 x 3 on the first row (8 x 3 =24, carrying the 2 for 20, then 1 x 3) 18 x 10 on the

			2nd row. Show multiplying by 10 by putting zero in units first. 

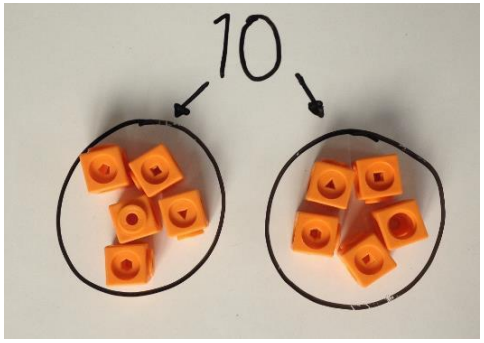
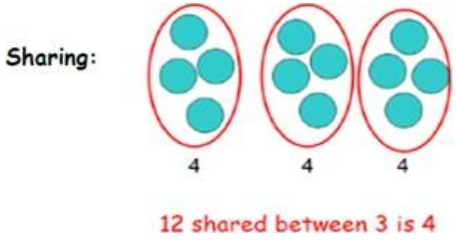
Objective & Strategy	Concrete	Pictorial	Abstract
Multiplying decimals up to 2 decimal places by a single digit.			Remind children that the single digit belongs in the units column. Line up the decimal points in the question and the answer.  Another good trick for remembering how many digits come after the decimal point is that how many digits come after the decimal point in the answer.

Y6

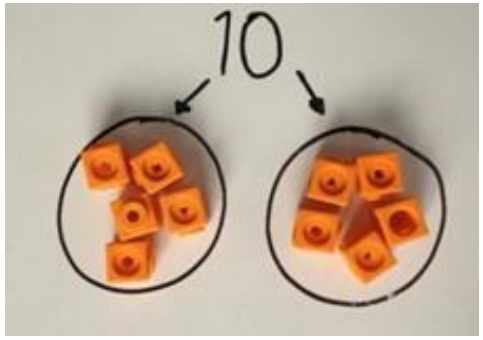
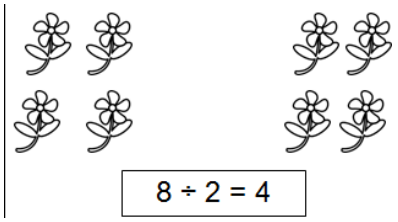
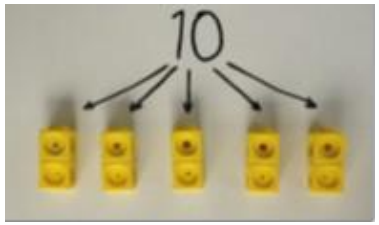
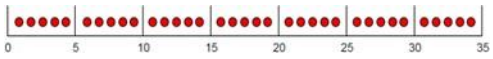
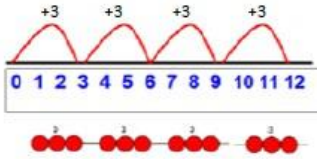
MULTIPLICATION

November 2018

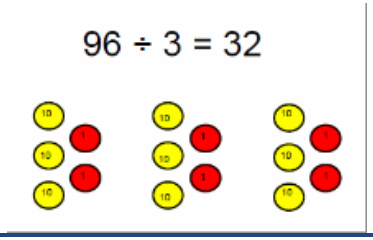
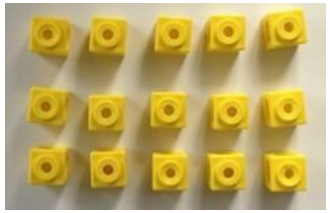
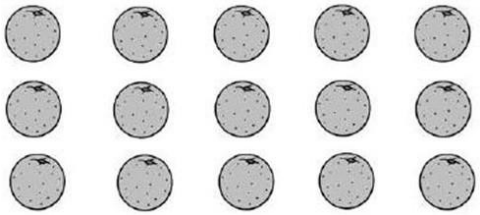
Y6 DIVISION ÷

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	   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

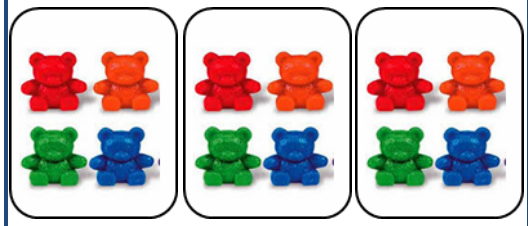
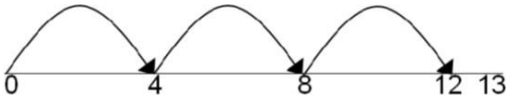
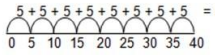
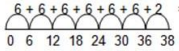
Y6 DIVISION

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	 I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities.  8 ÷ 2 = 4	12 ÷ 3 = 4
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.  	Use number lines for grouping  12 ÷ 3 = 4	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

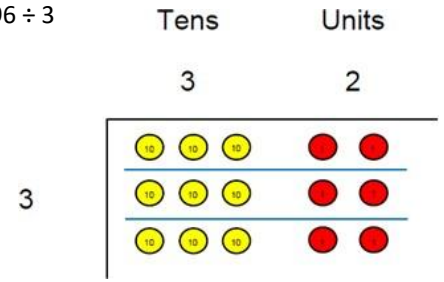
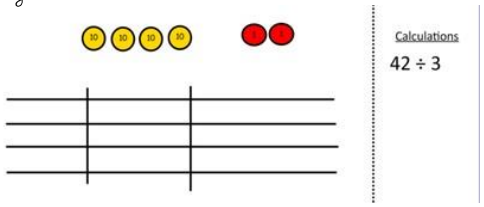
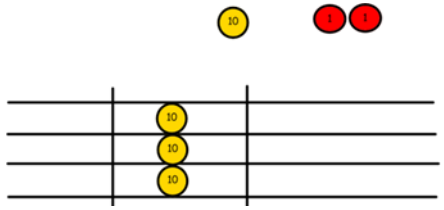
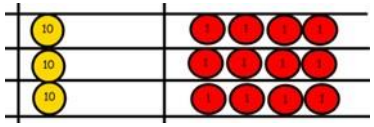
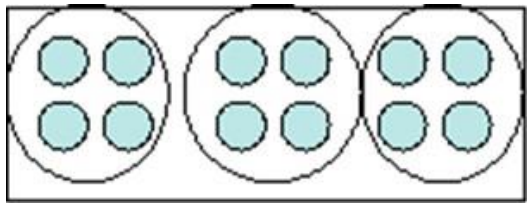
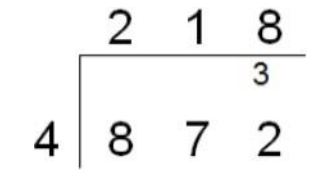
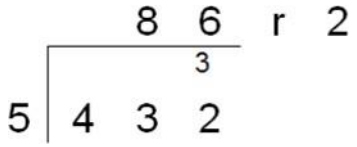
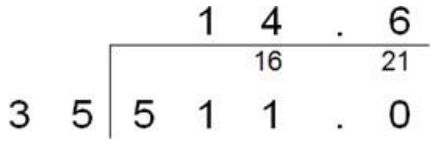
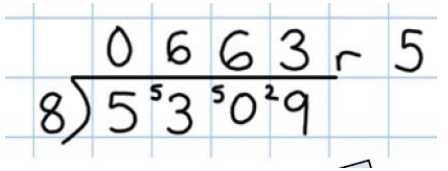
Y6 DIVISION

Objective & Strategy	Concrete	Pictorial	Abstract
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding.  24 divided into groups of 6 = 4 		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. 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

Y6 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.  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.	Complete written divisions and show the re- mainder using r. 

Y4-6 DIVISION

Objective & Strategy	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division	96 ÷ 3  Use 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.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	Begin with divisions that divide equally with no remainder.  Move onto divisions with a remainder.  Finally move into decimal places to divide the total accurately.  

Long Division

Step 1—a remainder in the ones

```
    h  t  o
       0 4 1 R1
    ----------
4 ) 1 6 5
```

4 does not go into 1 (hundred). So combine the 1 hundred with the 6 tens (160).

4 goes into 16 four times.

4 goes into 5 once, leaving a remainder of 1.

```
     th h  t  o
        0 4 0 0 R7
    -------------
8 ) 3 2 0 7
```

8 does not go into 3 of the thousands. So combine the 3 thousands with the 2 hundreds (3,200).

8 goes into 32 four times (3,200 ÷ 8 = 400)
8 goes into 0 zero times (tens).
8 goes into 7 zero times, and leaves a remainder of 7.

Y6 DIVISION

Long Division

Step 1 continued...

h	t	o
	6	1
4)	2	4 7
	−	4
		3

When dividing the ones, 4 goes into 7 one time. Multiply 1 × 4 = 4, write that four under the 7, and subract. This finds us the remainder of 3.

Check: 4 × 61 + 3 = 247

th	h	t	o
	4	0	2
4)	1	6	0 9
		−	8
			1

When dividing the ones, 4 goes into 9 two times. Multiply 2 × 4 = 8, write that eight under the 9, and subract. This finds us the remainder of 1.

Check: 4 × 402 + 1 = 1,609

Y6 DIVISION

Long Division

Step 2—a remainder in the tens

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
t o 2 2)5 8	t o 2 2)5 8 - 4 1	t o 2 9 2)5 8 - 4 ↓ 1 8
Two goes into 5 two times, or 5 tens ÷ 2 = 2 whole tens -- but there is a remainder!	To find it, multiply 2 × 2 = 4, write that 4 under the five, and subtract to find the remainder of 1 ten.	Next, drop down the 8 of the ones next to the leftover 1 ten. You combine the remainder ten with 8 ones, and get 18.

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
t o 2 9 2)5 8 - 4 1 8	t o 2 9 2)5 8 - 4 1 8 - 1 8 0	t o 2 9 2)5 8 - 4 1 8 - 1 8 0
Divide 2 into 18. Place 9 into the quotient.	Multiply 9 × 2 = 18, write that 18 under the 18, and subtract.	The division is over since there are no more digits in the dividend. The quotient is 29.

Y6 DIVISION

Long Division

Step 2—a remainder in any of the place values

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
h t o 1 2)2 7 8	h t o 1 2)2 7 8 -2 0	h t o 1 8 2)2 7 8 -2 ↓ 0 7
Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.	Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.	Next, drop down the 7 of the tens next to the zero.
Divide.	**Multiply & subtract.**	**Drop down the next digit.**
h t o 1 3 2)2 7 8 -2 0 7	h t o 1 3 2)2 7 8 -2 0 7 - 6 1	h t o 1 3 2)2 7 8 -2 0 7 - 6 1 8
Divide 2 into 7. Place 3 into the quotient.	Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.	Next, drop down the 8 of the ones next to the 1 leftover ten.
1. Divide.	**2. Multiply & subtract.**	**3. Drop down the next digit.**
h t o 1 3 9 2)2 7 8 -2 0 7 - 6 1 8	h t o 1 3 9 2)2 7 8 -2 0 7 - 6 1 8 -1 8 0	h t o 1 3 9 2)2 7 8 -2 0 7 - 6 1 8 -1 8 0
Divide 2 into 18. Place 9 into the quotient.	Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.	There are no more digits to drop down. The quotient is 139.

Y6 DIVISION