Binfield C of E School Calculation Policy

Last Edited 27th January 2019

Where should I start?

This calculation policy is based on a developmental approach to the four operations. All children should begin with stage 1 and build up to stage 4. Children should only move on to the next stage one they have 'mastered' their current stage. To have 'mastered' a stage the children should be able to:

- calculate confidently using the methods at that stage
- confidently explain the purpose of each calculation
- explain each stage in the calculation
- use concrete resources, pictorial methods ***and*** abstract methods to complete the calculation.

It may help to ask your child or their teacher what methods they are currently using in their class.

As a rough guide, we would expect that most children's abilities would follow the table below. It is however only a guide: mastering the calculations at each stage is essential and is more critical to progressing their learning than moving as quickly as possible though the stages. Because understanding in mathematics is cumulative, It can be counter-productive to move children to the next stage if they have not mastery of the previous stage.

Stage	Developing mastery of this stage is expected in:
Stage 1	YR/Y1
Stage 2	Y1/Y2
Stage 3	Y2/Y3
Stage 4	Y3/Y4
Stage 5	Y4/Y5

Mastery of all stages achieved	Y5/Y6

		National Curriculum Statement	
	Number and place value	**Addition and Subtraction**	**Multiplication and Subtraction**
Year 1	• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s • given a number, identify 1 more and 1 less • identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least • read and write numbers from 1 to 20 in numerals and words	• read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs • represent and use number bonds and related subtraction facts within 20 • add and subtract one-digit and two-digit numbers to 20, including 0 • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? − 9	• solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Year 2	• count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward
	• recognise the place value of each digit in a two-digit number (10s, 1s)
	• identify, represent and estimate numbers using different representations, including the number line
	• compare and order numbers from 0 up to 100; use <, > and = signs
	• read and write numbers to at least 100 in numerals and in words
	• use place value and number facts to solve problems
		• solve problems with addition and subtraction:
		  • using concrete objects and pictorial representations, including those involving numbers, quantities and measures
		  • applying their increasing knowledge of mental and written methods
		• recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
		• add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
		  • a two-digit number and 1s
		  • a two-digit number and 10s
		  • 2 two-digit numbers
		  • adding 3 one-digit numbers
		• show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
		• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems
			• recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
			• calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
			• show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot
			• solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

		National Curriculum Statement	
	Number and place value	**Addition and Subtraction**	**Multiplication and Subtraction**

Year 3	• count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
	• recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)
	• compare and order numbers up to 1,000
	• identify, represent and estimate numbers using different representations
	• read and write numbers up to 1,000 in numerals and in words
	• solve number problems and practical problems involving these ideas
		• add and subtract numbers mentally, including:
		  • a three-digit number and 1s
		  • a three-digit number and 10s
		  • a three-digit number and 100s
		• add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
		• estimate the answer to a calculation and use inverse operations to check answers
		• solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
			• recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
			• write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
			• solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

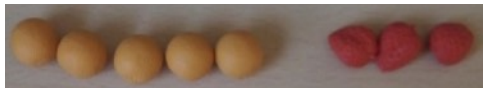
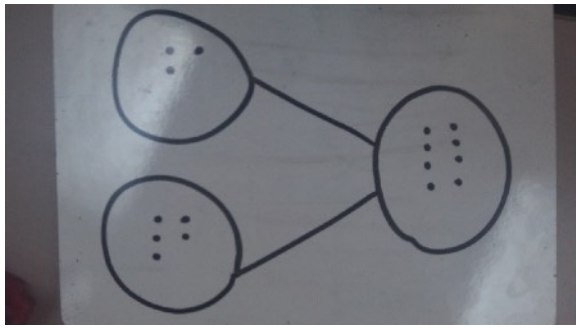
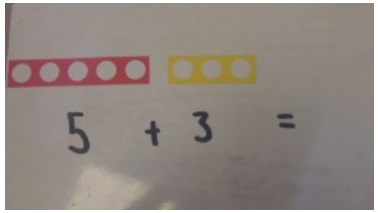
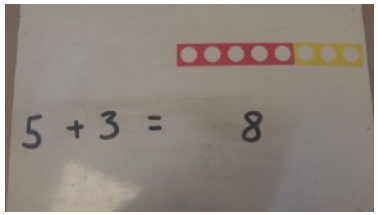
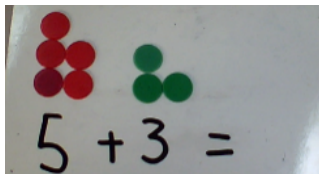
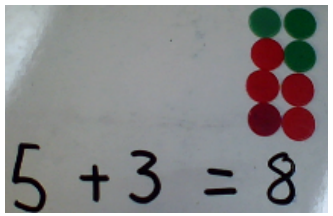
Year 4	• count in multiples of 6, 7, 9, 25 and 1,000 • find 1,000 more or less than a given number • count backwards through 0 to include negative numbers • recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) • order and compare numbers beyond 1,000 • identify, represent and estimate numbers using different representations • round any number to the nearest 10, 100 or 1,000 • solve number and practical problems that involve all of the above and with increasingly large positive numbers • read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value	• add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • estimate and use inverse operations to check answers to a calculation • solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	• recall multiplication and division facts for multiplication tables up to 12 × 12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers • recognise and use factor pairs and commutativity in mental calculations • multiply two-digit and three-digit numbers by a one-digit number using formal written layout • solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

		National Curriculum Statement	
	Number and place value	**Addition and Subtraction**	**Multiplication and Subtraction**
Year 5	• read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit • count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 • round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 • solve number problems and practical problems that involve all of the above • read Roman numerals to 1,000 (M) and recognise years written in Roman numerals	• add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • add and subtract numbers mentally with increasingly large numbers • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	• identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19 • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • multiply and divide numbers mentally, drawing upon known facts • divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context • multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 • recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) • solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

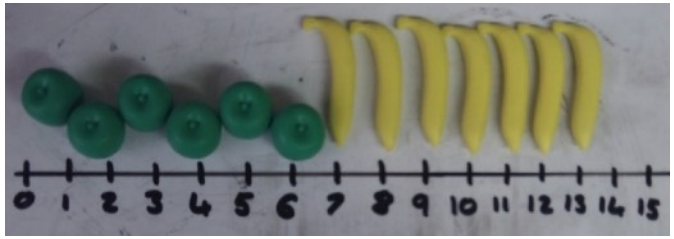
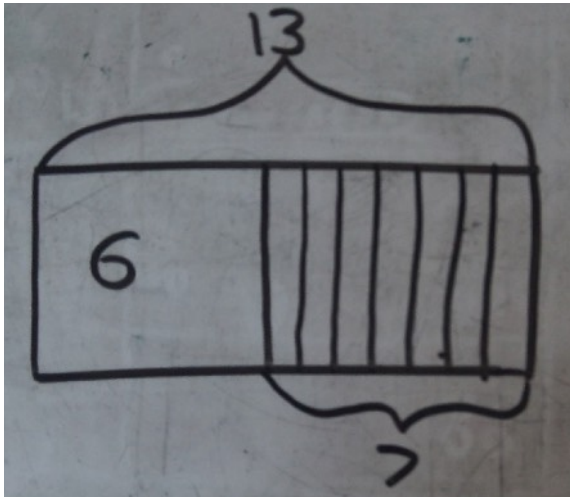
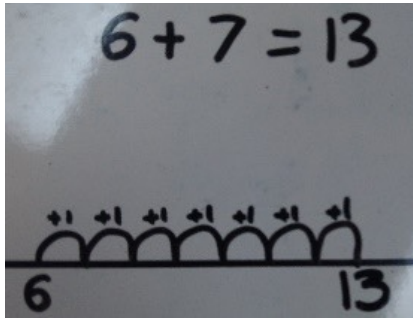
		National Curriculum Statement	
	Number and place value	**Addition and Subtraction**	**Multiplication and Subtraction**
Year 6	• read, write, order and compare numbers up to 10,000,000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across 0 • solve number and practical problems that involve all of the above	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the 4 operations • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	

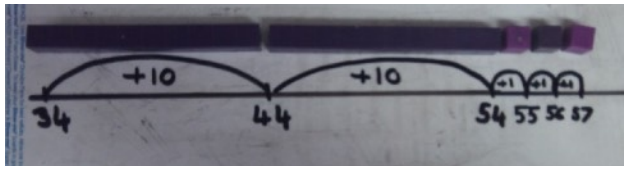
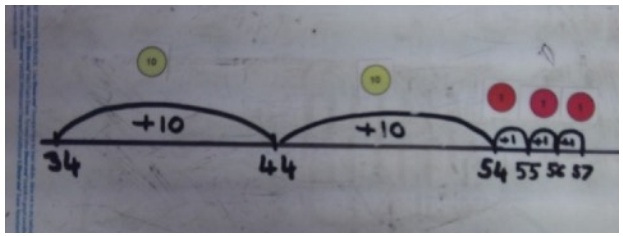
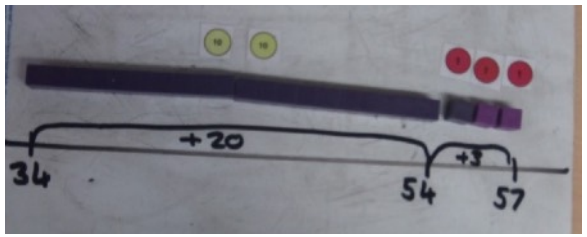
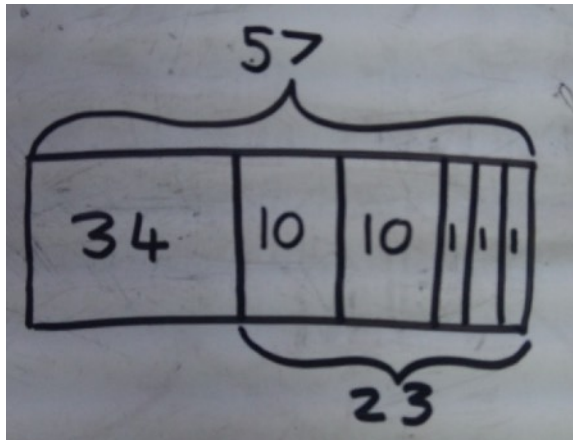
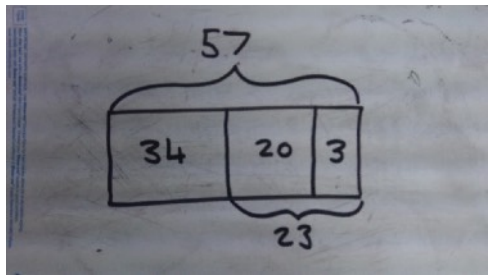
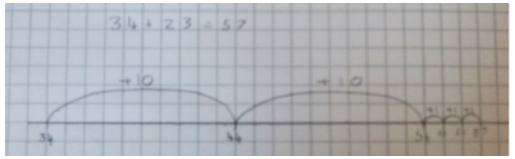
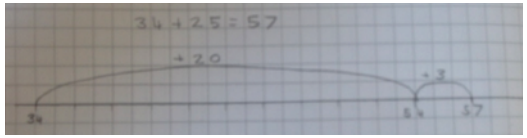
ADDITION

	Concrete and visual support	Abstract support

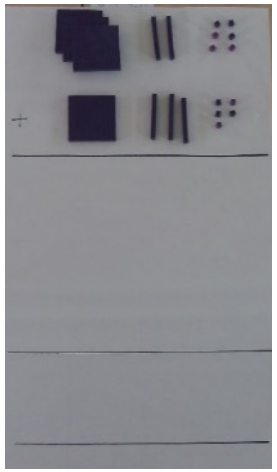
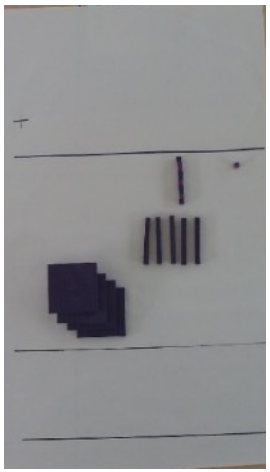
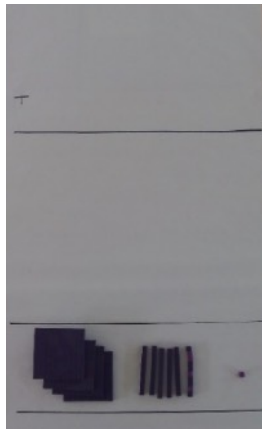
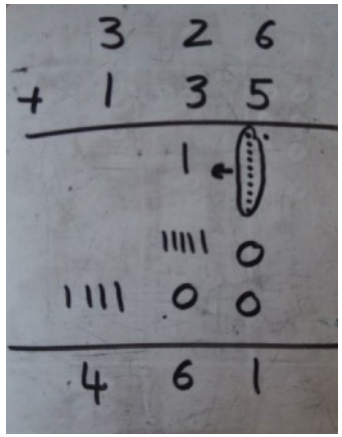
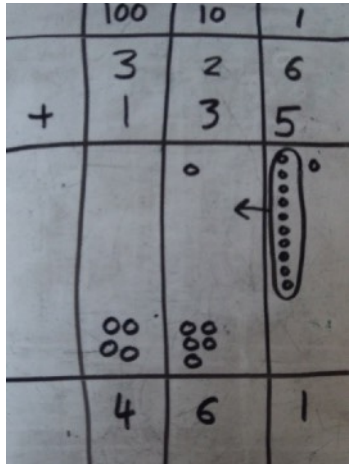
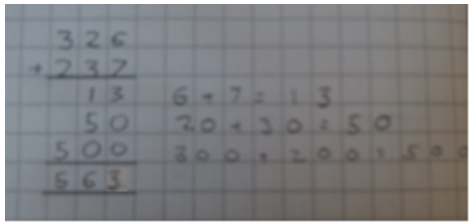
Stage 1	Children use counting objects to show how parts add together to make a whole. 5 + 3 = 8 3 + 5 = 8     Or:   Children use counting objects to show how parts add together to make a whole – regrouping the objects into groups of tens.	Children use part-part-whole diagrams to demonstrate addition of two numbers. 5 + 3 = 8 3 + 5 = 8  Children use counters to assist in simple additions, without regrouping. Video: Addition counters – no regrouping Children use part-part-whole diagrams to demonstrate additions, showing parts and wholes grouped into tens and ones. 7 + 8 = 15	Children use counters to add two 1 digit numbers, without regrouping. With Carrbarrs   With counters:   Children use counters to add two 1 digit numbers, regrouping.

Stage 1

Stage 2	Children count on using number lines and counting objects, unifix, numicon etc 6 + 7 = 13 	Children draw a bar model in which they can count on rather than count all. 6 + 7 = 13 	Children use a number line to add two 1 digit numbers. Counting from left to right. 

Stage 3	Children count on using number lines, with Diennes and place value counters, in which children can see each ten being added separately followed by each one. 34 + 23 = 57 Using Diennes:  Using place value counters:  Children count on using number lines, with Diennes and using place value counters, in which tens are added as a group, followed by ones as a group. 34 + 23 = 57  Children use Diennes or place value counters to show how groups of ten are added, and then a group of ones is taken away to compensate.	Children use a bar model in which children can see each ten being added separately followed by each one. 34 + 23 = 57  Children use a bar model in which children can see the numbers being added in groups of tens and groups of one. 34 + 23 = 57  Children use a bar model in which children can see	Children use a number line to add two 2 digit numbers, first counting in tens, then in ones.  Children use a number line to add two 2 digit numbers, adding the tens in one jump, then the ones in one jump.  Video: Numberline addition – groups of 10 Video: Numberline addition – tens then ones

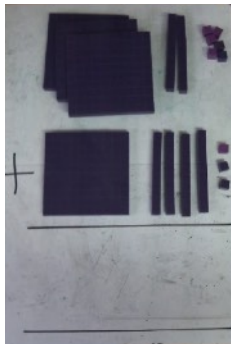
Stage 3

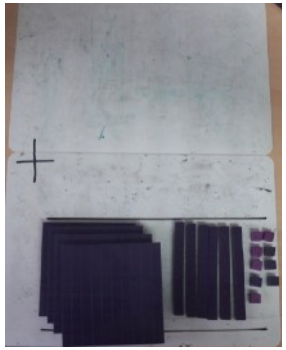
Stage 4	Children use Diennes or place value counters to represent the expanded column method of addition. 326 + 235 = 561 Using Diennes:    Using place value counters:	Children draw Diennes or place value counters to represent the expanded column method of addition. 326 + 137 = 461 Drawing Diennes:  Drawing place value counters: 	Children use the expanded column method of addition to add 2 and 3 digit numbers, beginning with the least significant digit first. 326 + 437 = 563  Video: Expanded column addition

Children use Diennes or place value counters to represent the column method of addition.

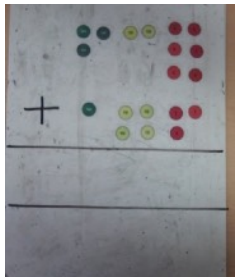
326 + 143 = 469

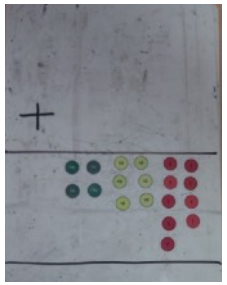
Using Diennes





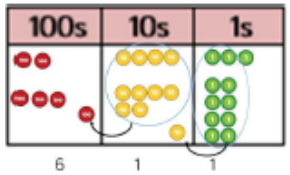
Using place value counters:





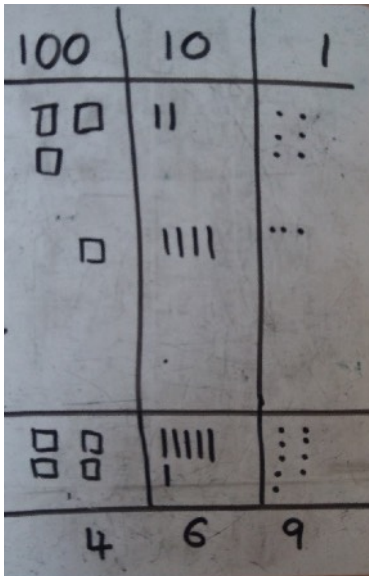
Children use place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- children exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.

243 + 368 = 611



Children draw Diennes or place value counters to represent the column method of addition, without carrying below the line.

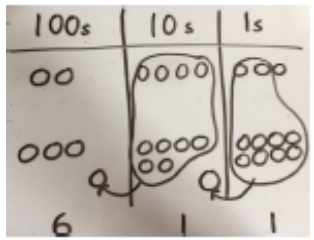
326 + 143 = 469



Video: Column addition – no regrouping

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

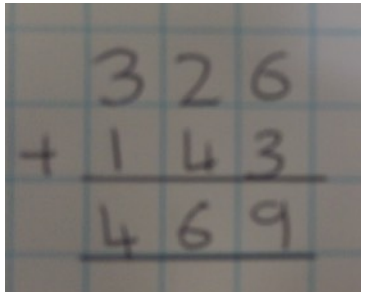
243 + 368 = 611



Video: Column addition - regrouping

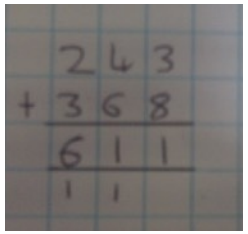
Children use the column method of addition to add 2, 3 and 4 digit numbers without needing to carry below the line.

326 + 143 = 469

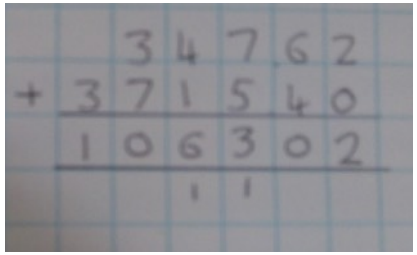


Children use the column method of addition to add 2, 3 and 4 digit numbers, carrying below the line.

243 + 368 = 611

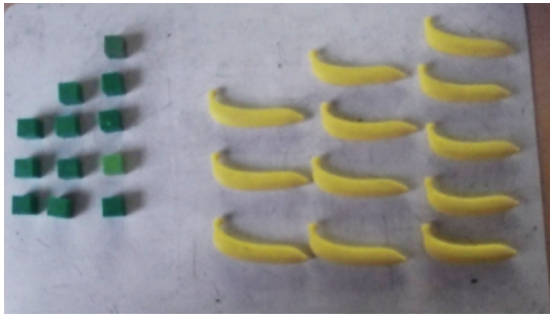
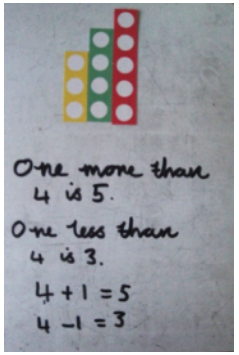


347.62 + 3715.40 = 106302



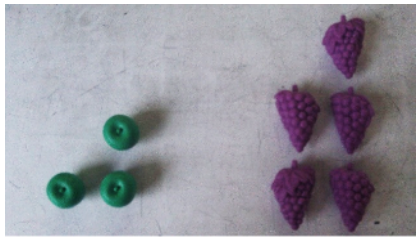
Video: Adding decimals

SUBTRACTION

	Concrete and visual support	**Abstract Calculation**
	Children use counting objects to demonstrate one more and one less. What is one more and one less than 3? 	Children find one more and one less 

Children use counting objects to show how a whole can be made into parts.

The whole: 8, can be split into parts: 3 and 5.

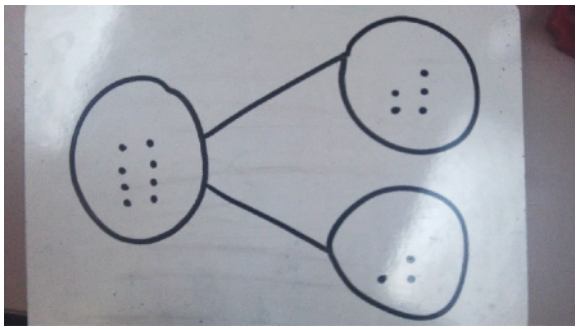


Children use counting objects to show how a whole can be split into parts - regrouping the objects into groups of tens.

15 – 7 = 8
15 – 8 = 7

Children use part-part-whole diagrams to demonstrate subtraction of two numbers.

The whole: 8, can be split into parts: 3 and 5.



Children use counters to assist in simple subtractions, without regrouping.

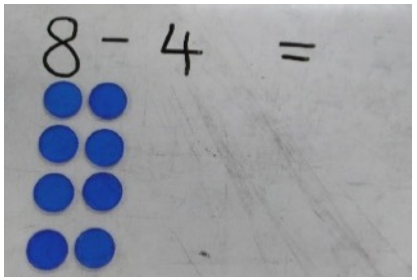
Video: Column subtraction – no regrouping

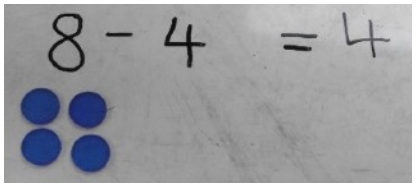
Children use part-part-whole diagrams to demonstrate subtractions, showing parts and wholes grouped into tens and ones.

15 – 7 = 8
15 – 8 = 7

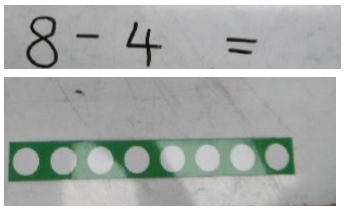
Children use counters to subtract two 1 digit numbers without regrouping.

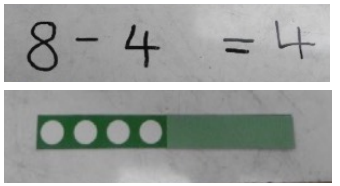
With counters:



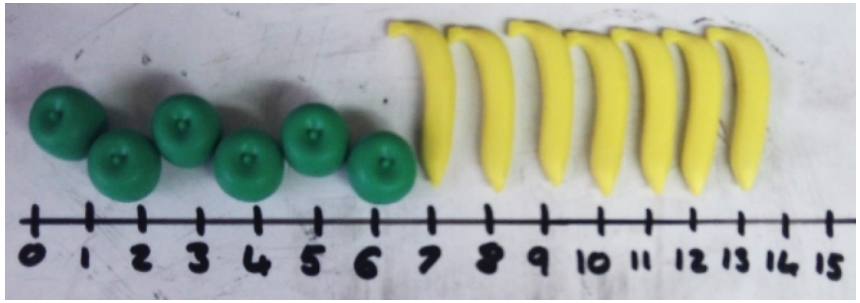
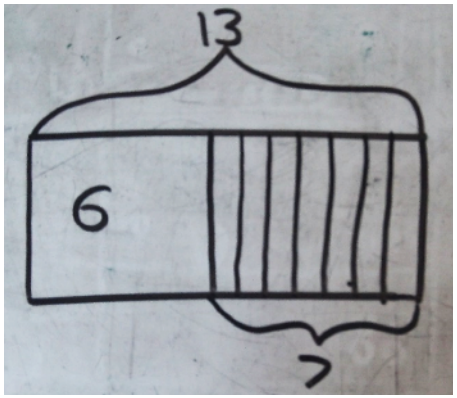
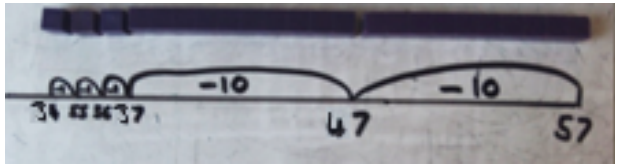
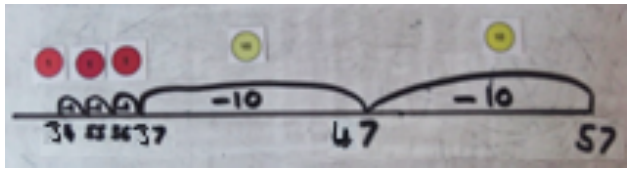
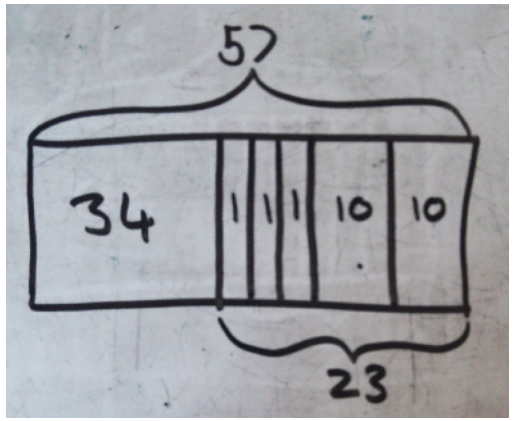


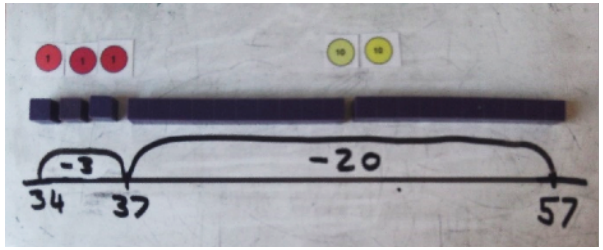
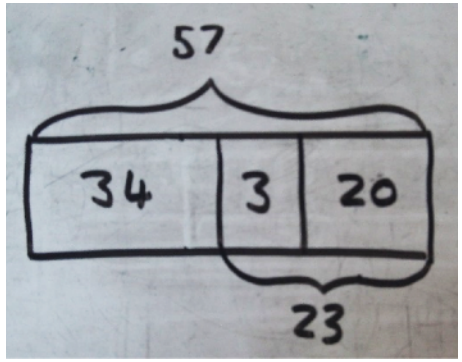
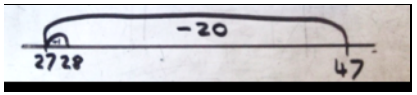
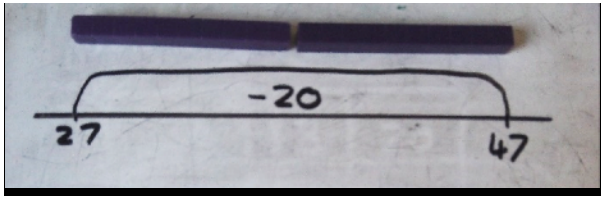
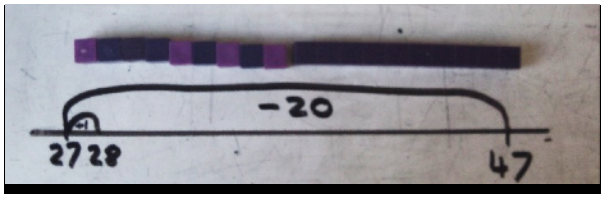
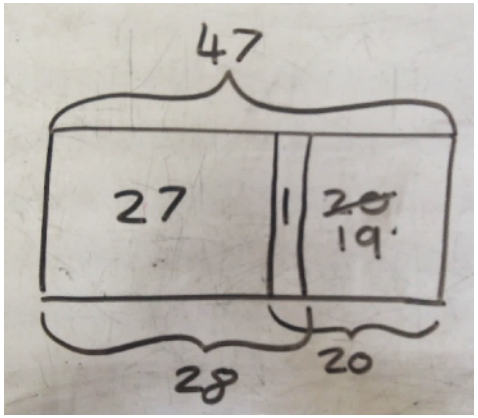
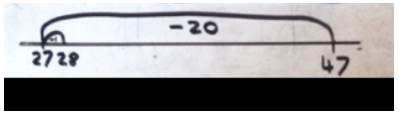
With Carrbars

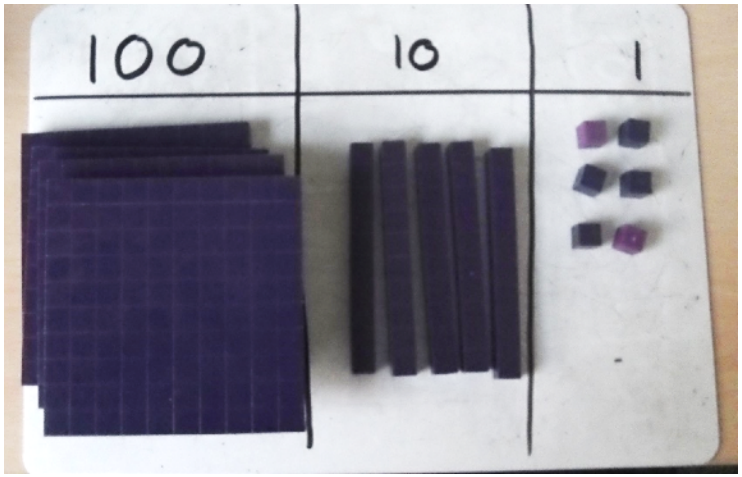
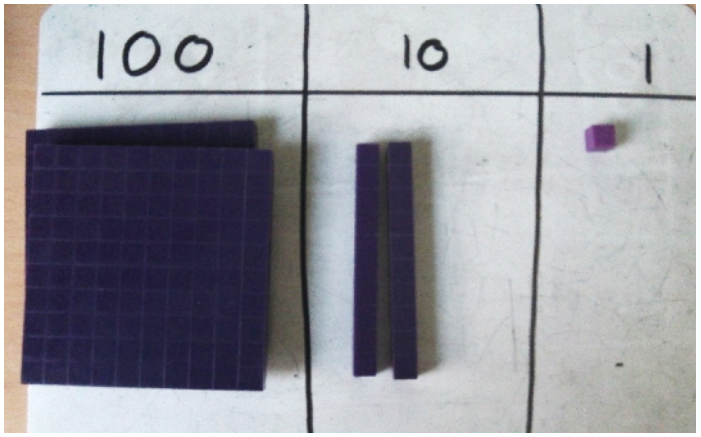
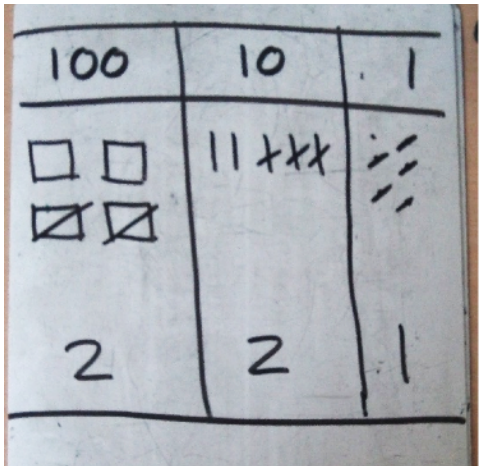
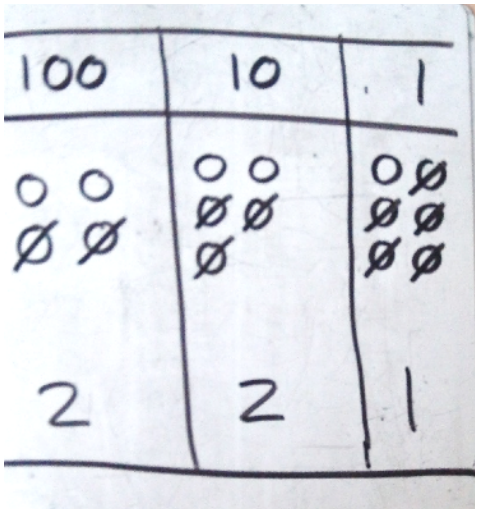
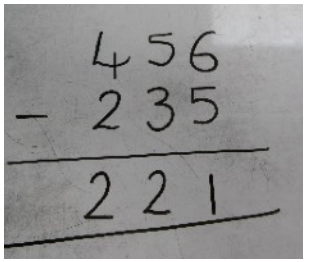




Children use counters to subtract two 1 digit numbers,

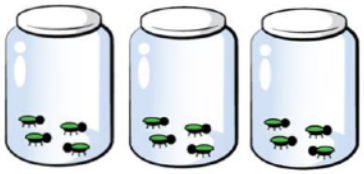
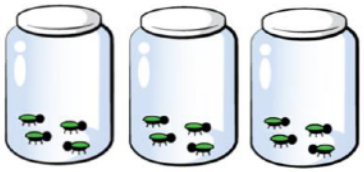
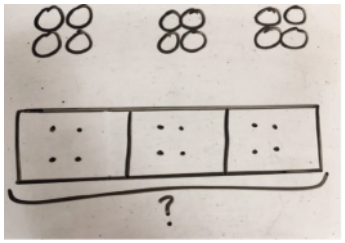
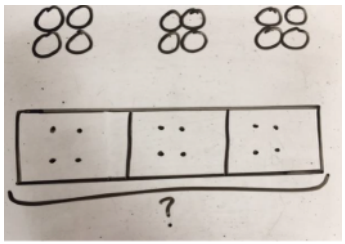
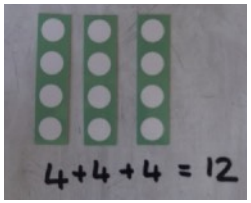
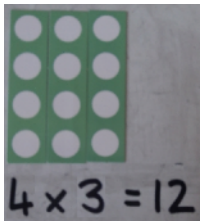
Stage 2	Children count back using number lines and counting objects, unifix, numicon etc 13 – 6 = 7  	Children draw a bar model in which they can count back in ones. . 13 – 6 = 7  	Children use a number line to subtract 1 digit numbers. Video: Numberline subtraction
Stage 3	Children count back using number lines, with Diennes and place value counters, in which children can see the tens being subtracted separately followed by the ones. 57 – 23 = 34 With Diennes:  With place value counters:  	Children use a bar model in which children can see each tens being subtracted separately, followed by each one. 57 – 23 = 34  	Children use a number line to subtract 2 digit numbers, first with tens, then in ones. Video: Numberline subtraction – groups of 10

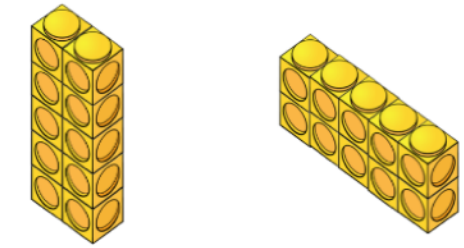
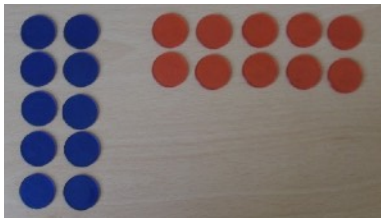
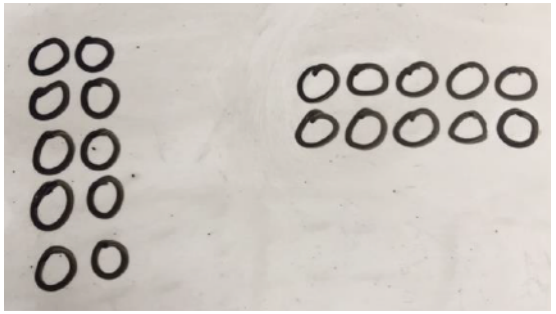
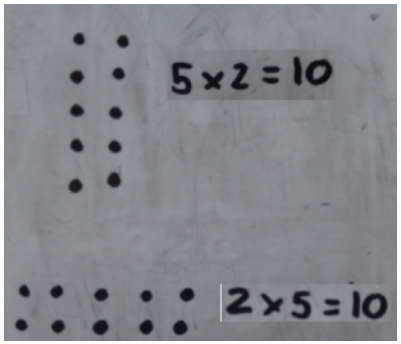
Stage 3	Children count on using number lines, with Diennes and using place value counters, in which the tens are subtracted as a group, followed by the ones as a group. 57 – 23 = 34  Video: Numberline subtraction – tens then ones	Children use a bar model in which they can see the numbers being subtracted in groups of tens and groups of one. 57 – 23 = 34 	Children use a number line to subtract 2 digit numbers, subtracting the tens in one jumps, then the ones in one jump. 57 – 23 = 23 
	Children use Diennes or place value counters to show how groups of ten are subtracted, and then a group of ones is added to compensate. 47 – 19 = 38  	Children use a bar model in which children can see the tens being subtracted and then ones added to compensate. 47 – 19 = 28 	Children use a number line to subtract 2 digit numbers, using the compensation method. 47 – 19 = 28  Video: Numberline subtracton compensation

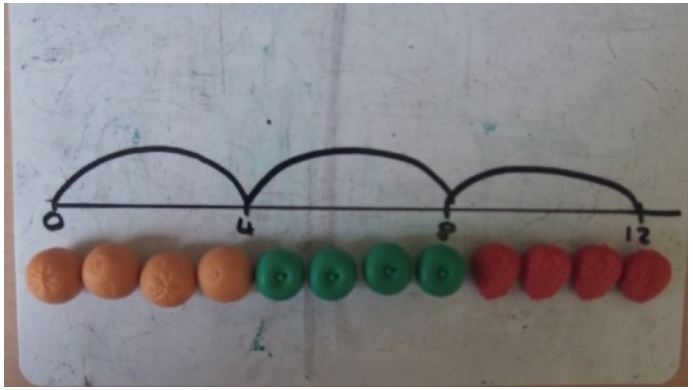
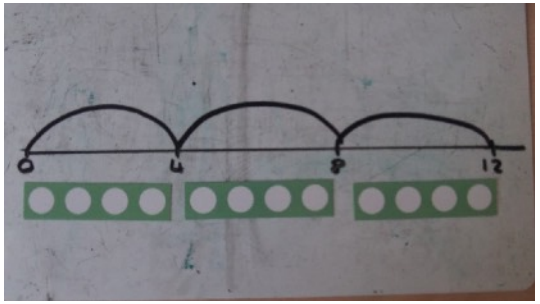
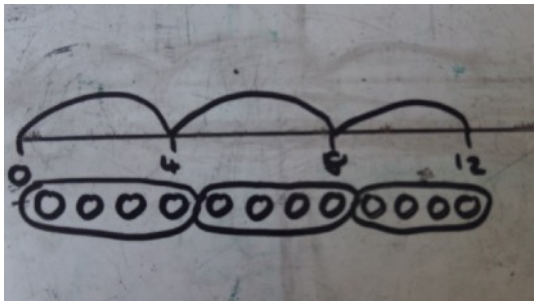
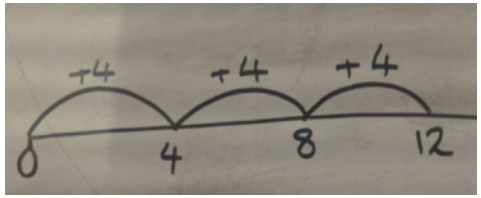
Stage 4	Children use Diennes or place value counters to represent the column method of subtraction, without needing to exchange. 456 – 235 = 221   	Children draw Diennes or place value counters to represent the column method of subtraction, without needing to exchange. 456 – 235 = 221 Drawing Diennes:  Drawing place value counters:  	Children use the column method of subtraction to subtract 2 digit and 3 digit numbers, without needing to exchange. 456 – 235 = 221  **Hint:** We say ‘exchenge’ because we exchanging one lot of ten for ten lots of one. We don’t ‘borrow’ because in this calculation we will never give anything back! Video: Column subtraction – no carrying

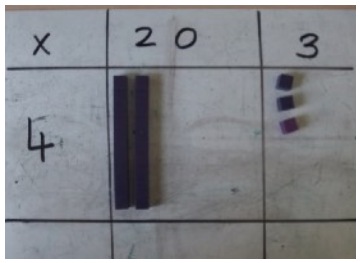
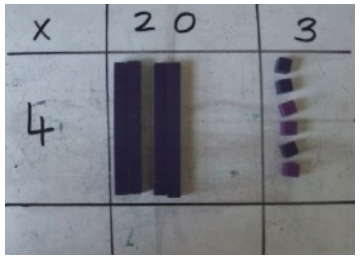
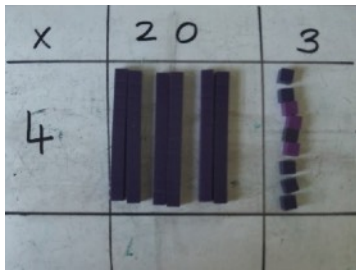
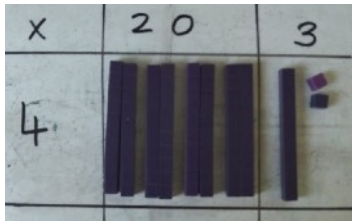
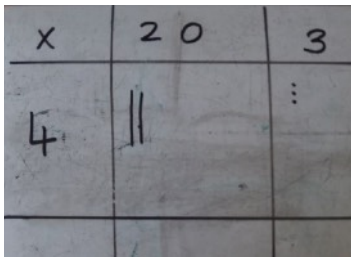
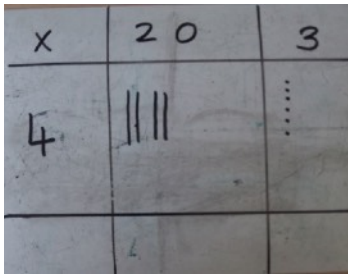
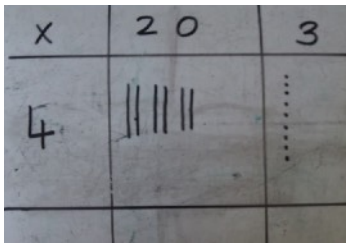
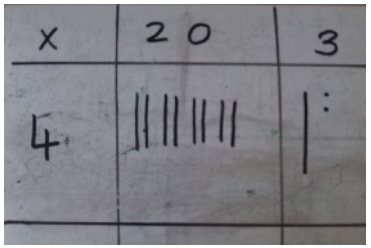
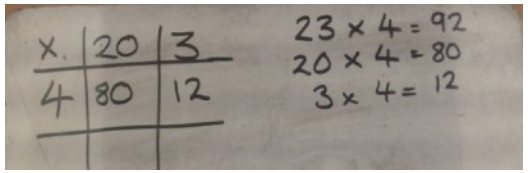
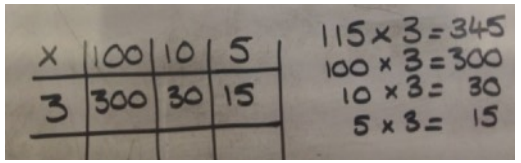
MULTIPLICATION

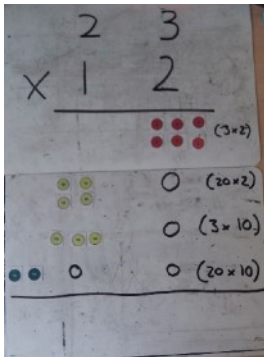
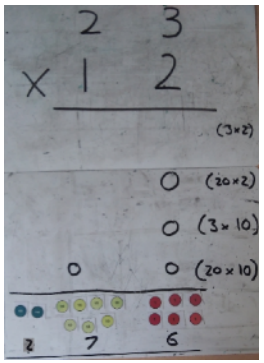
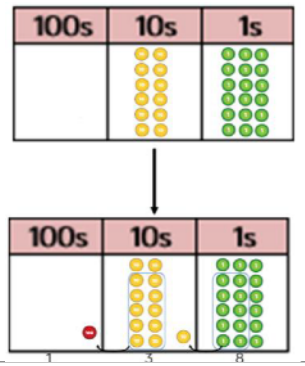
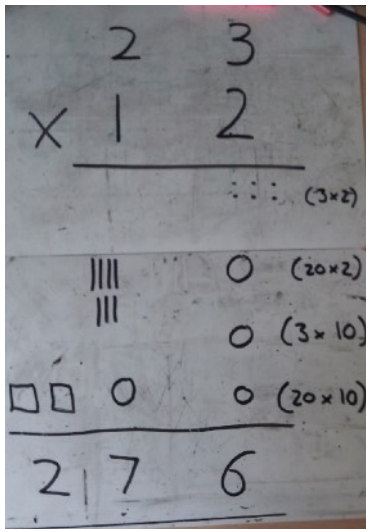
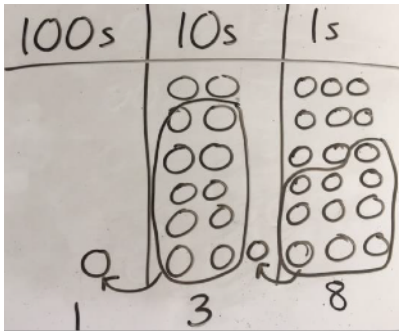
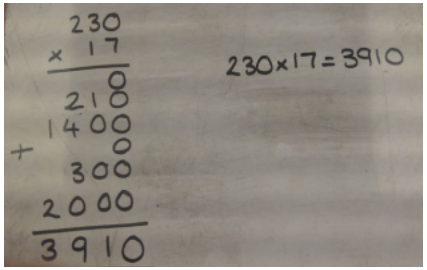
	Concrete and Pictorial Support	Abstract Method

Stage 1	Children show repeated addition using objects, or unifix. There are 3 equal groups, with 4 in each group. Children understand this is the same as: 4 + 4 + 4 =12   Children show repeated addition using counting objects, or unifix. There are 3 equal groups, with 4 in each group. Children understand this is the same as: 4 x 3 = 12  	Children to represent the practical resources in a picture and use a bar model. There are 3 equal groups, with 4 in each group. Children understand this is the same as: 4 + 4 + 4 = 12  Children to represent the practical resources in a picture and use a bar model. There are 3 equal groups, with 4 in each group. Children understand this is the same as: 4 x 3 = 12 	Children can use repeated addition for 2, 5, 10 using ‘groups of’ phrasing and Carrbars to show multiplication. There are 3 equal groups, with 4 in each group. Children understand this is the same as: 4 + 4 + 4 = 12  Children can use a written method involving the vocabulary ‘3 groups of four’.  **Hint:** We say that this the calculation represented here is: ‘three lots of four is 12’. The notation we use to show this is: 4 x 3 = 12. This is because we take four objects and multiply them three times. 4 is the multiplicand, 3 is the multiplier and 12 is the product.

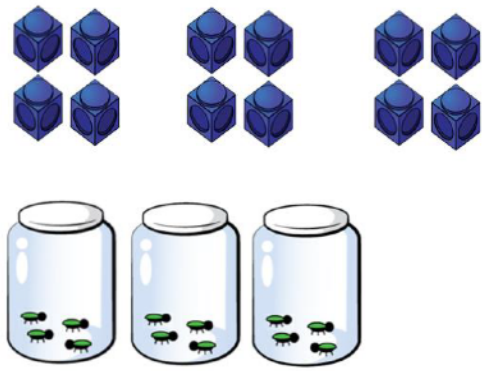
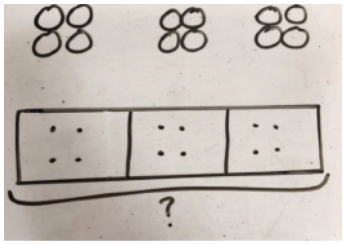
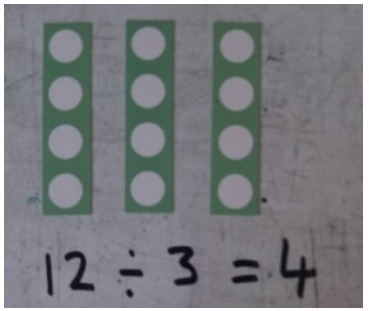
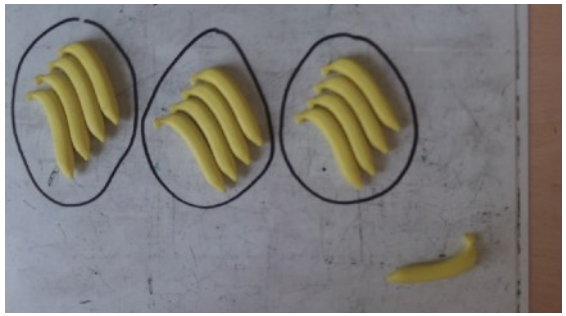
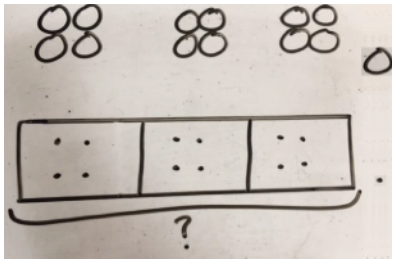
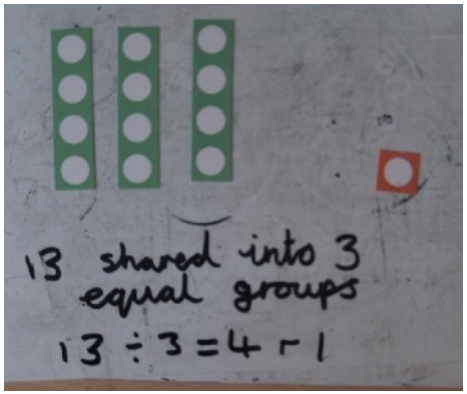
Stage 1	Children create arrays to illustrate commutativity. Counters and other objects can also be used. 5 × 2 = 10 2 × 5 = 10  **Hint:** The word 'commutative' comes from 'commute' or 'move around', so the commutative property refers to being able to move numbers around within number sentences. For example: when 5 is the multiplicand and 2 is the multiplier, we get the product 10: written 5 x 2 = 10. When the multiplicand is 2 and the multiplier is 5 the product is still 10: written 2 x 5 = 10.	Children create arrays using counters, and pictorially. 5 × 2 = 10 2 × 5 = 10 With counters:  Drawing counters: 	Children can use arrays to show repeated addition. 5 × 2 = 10 2 × 5 = 10  Video – Multiplication arrays

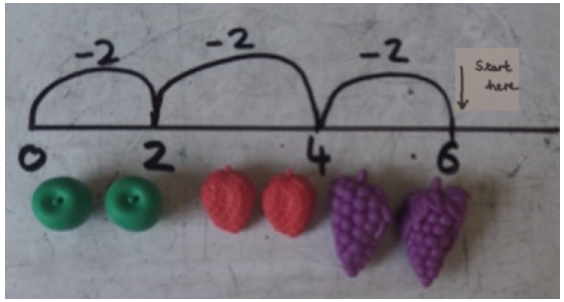
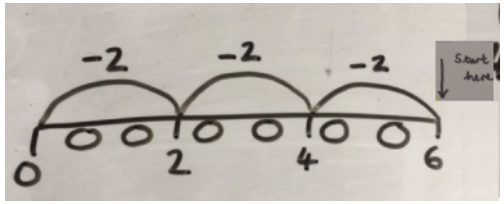
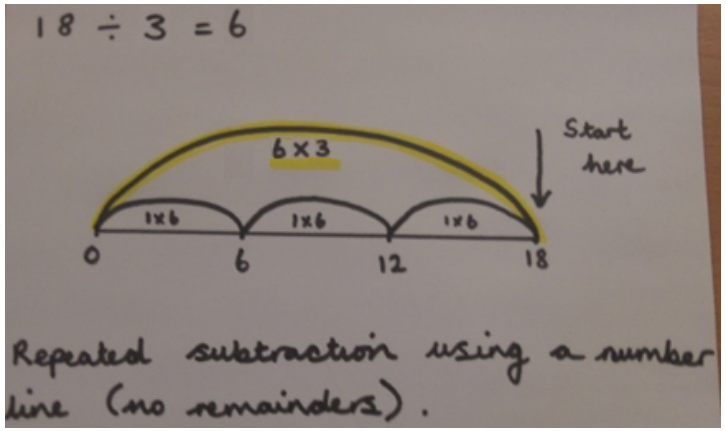
Stage 2	Children to represent repeated addition on a number line using counting objects or Carrbars. 4 x 3 = 12 	Children to represent repeated addition pictorially on a number line. 4 x 3 = 12  	Children can use number lines to show multiplication as repeated addition. 4 x 3 = 12  Video: Multiplication – repeated addition – number line

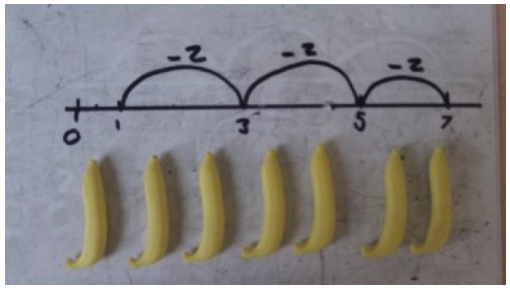
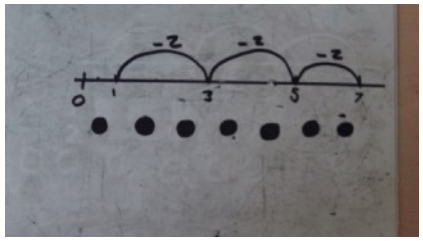
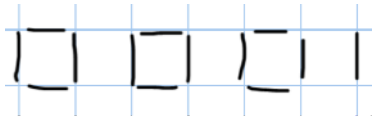
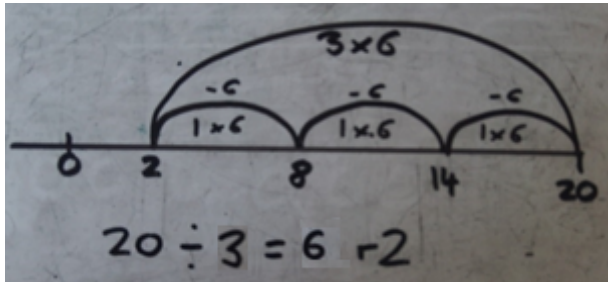
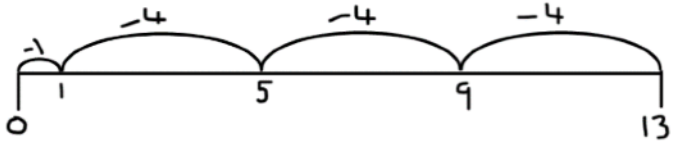
Stage 3	Children calculate using the grid method using Diennes or place value counters. 23 x 4 = 92 Step 1.  =23 Step 2.  = 46 Step 3.  = 69 Step 4.  = 92	Children represent the grid method by drawing Diennes or place value counters. 23 x 4 = 92 Step 1.  =23 Step 2.  =23 Step 3.  = 69 Step 4.  = 92	Children can use partitioning through the grid method to multiply. 23 x 4 = 92  3 x 115 = 345  Video: Multiplication – grid method

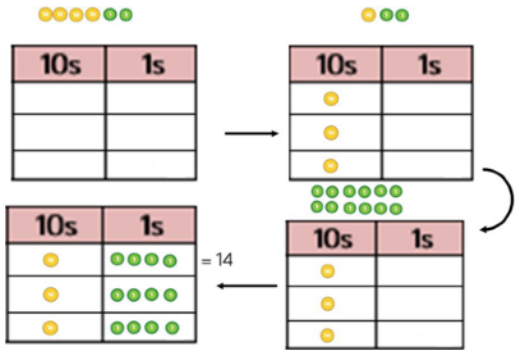
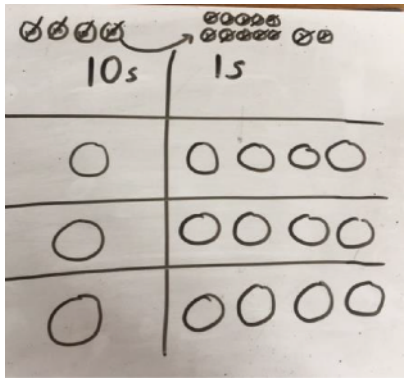
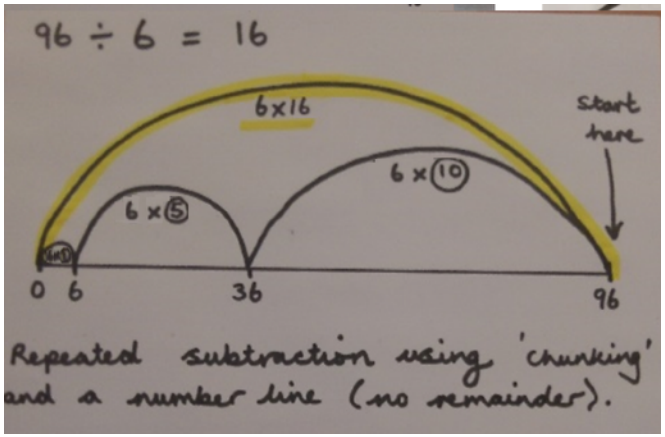
Stage 4	Children calculate using the expanded column method using place value counters. 23 x 12 = 267   Children use compact column method with place value counters. 23 x 6 = 138  	Children represent the expanded column method by drawing Diennes. 23 x 12 = 267  **Hint**: We complete this calculation using the same method as left. Children represent the counters/base 10, pictorially e.g. the image below. 23 x 6 = 138  Video: Multiplication – expanded column method	Children can use expanded column method to multiply 2 and 3 digit numbers. 230 x 17 = 3910  **Hint:** The expanded column method leads children to the more compact method so that they understand its structure and efficiency. Children can use the compact method to multiply 2, 3 and 4 digit numbers. 23 x 6 = 138 6 x 23 = 23 × 6 138 1 1 **Hint:** The compact column method is similar to the expanded column method, in that we break the calculation down in the same way. In this example we begin by finding 6 lots of three (3 x 6 = 18). We write the 8 lots of one in the ones column and carry the 1 lot of ten in the tens column below the line. We then find 6 lots of 20 (20 x 6 = 120). We write the 2 lots of ten, together with the 1 lot of ten we had previously carried below the line, and

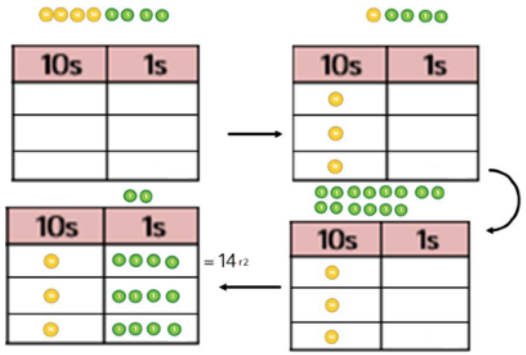
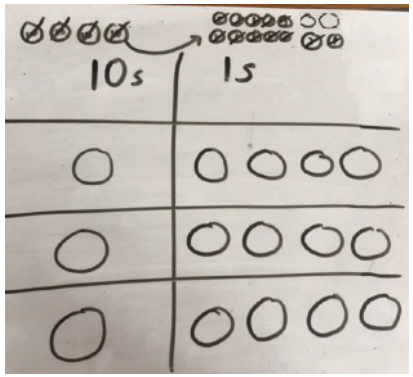
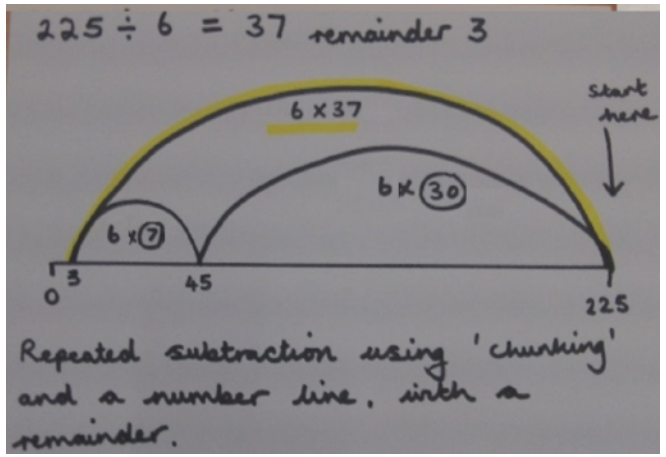
DIVISION

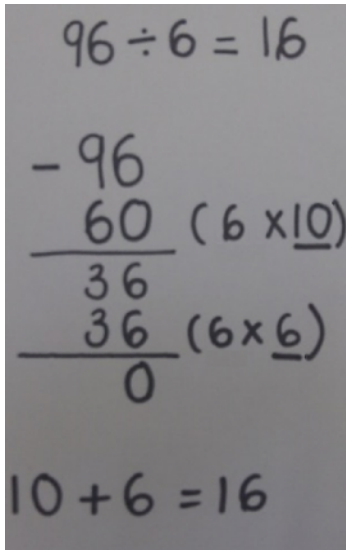
	Concrete and abstract support		Pictorial
Stage 1	Children share objects into groups, recording representations, without remainders. 12 ÷3 = 4 	Children show objects being shared into groups using bar models, without remainders. 12 ÷3 = 4 	Children share objects into groups, recording representations, without remainders. 
Stage 1	Children share objects into groups, recording representations, with remainders. 13 ÷3 = 4 r1 	Children show objects being shared into groups using bar models, with remainders. 13 ÷3 = 4r1 	Children share objects into groups, recording representations, with remainders. 

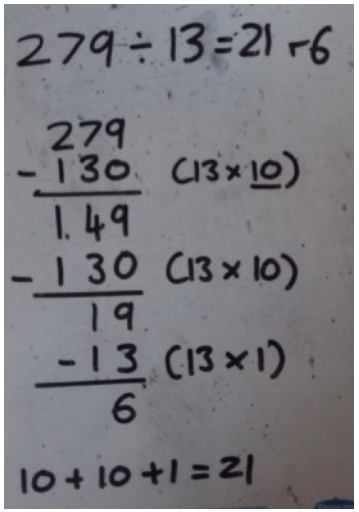
Stage 2	Children to represent repeated subtraction on a number line using concrete resources, without remainders. 6 ÷ 3 = 3 	Children to represent repeated subtraction pictorially on a number line, without remainders. 6 ÷ 3 = 2 	Children show division as repeated subtraction, using a number line, without remainders. 

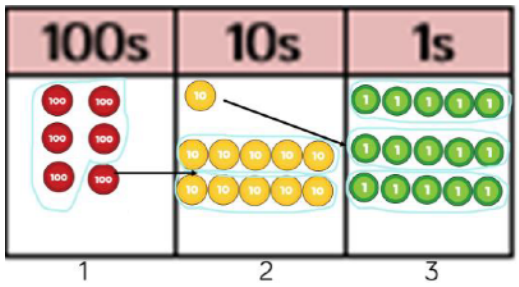
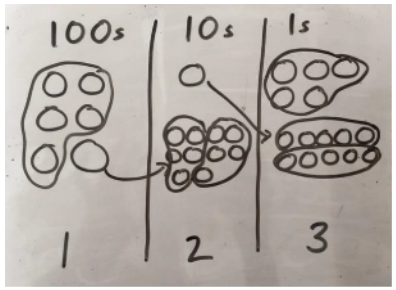
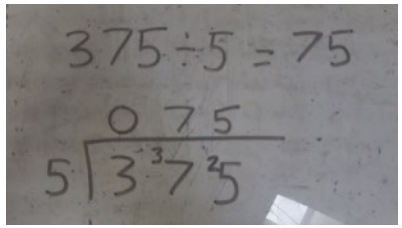
Stage 2	Children to use repeated subtraction on a number line using counting objects, with remainders. 7 ÷ 3 = 2 r1  Children perform divisions by making shapes using lolly sticks Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.  There are 3 whole squares, with 1 left over. 13 ÷ 3 = 4 r1	Children to represent repeated subtraction pictorially on a number line, with remainders. 7 ÷ 3 = 2 r1  Children to represent the lollipop sticks pictorially.  There are 3 whole squares, with 1 left over. 13 ÷ 3 = 4 r1	Children show division as repeated subtraction, using a number line, with remainders. 20 ÷ 3 = 6 r1  Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line. ‘3 groups of 4, with 1 left over’ 13 ÷ 3 = 4 r 1 

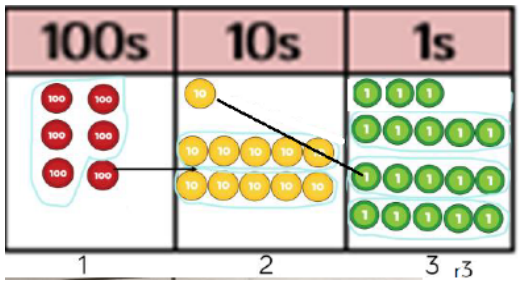
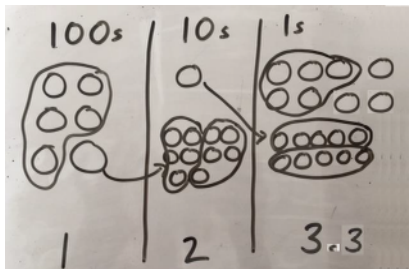
Stage 3	Children represent the chunking method with Diennes or place value counters, on a number line, without remainders. Sharing using place value counters. 42 ÷ 3 = 14  	Children represent the chunking method pictorially, on a number line, without remainders. Children to represent the place value counters pictorially. 42 ÷ 3 = 14  	Children use the chunking method on a number line without remainders.  **Hint:** Chunking is a method used for dividing larger numbers that are difficult to divide mentally. Chunking is repeated subtraction of the divisor and multiples of the divisor – in other words, working out how many groups of a number fit into another number. In this example we: • begin with 96 and subtract 10 lots of 6 to get 36 • we then subtract 5 lots of 6 to get 30 • next we subtract a last lot of 6 to get 0 • finally we add together the multipliers – 10, 5 and 1 to get 16 • thus we know that 96 ÷ 6 = 13

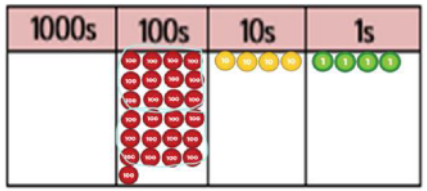
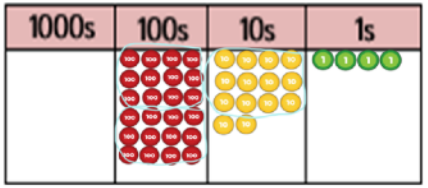
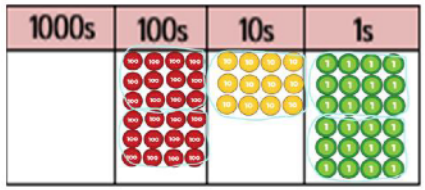
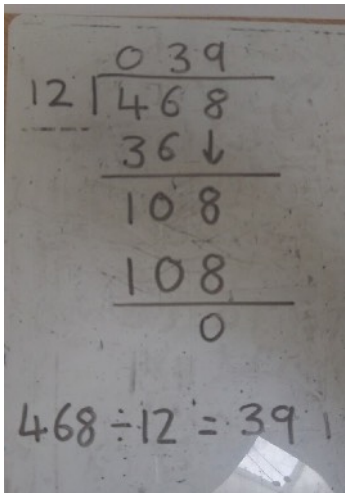
Stage 3	Children represent the chunking method with Diennes or place value counters, on a number line, with remainders. Sharing using place value counters. 44 ÷ 3 = 14 r2  	Children represent the chunking method pictorially, on a number line, with remainders. Children to represent the place value counters pictorially. 44 ÷ 3 = 14r2  	Children use the chunking method on a number line with remainders.  **Hint:** Chunking can be used to perform division calculations with or without remainders. In this example we: • begin with 225 and subtract 30 lots of 6 to get 45 • we then subtract 7 lots of 6 to get 3, from which we cannot subtract a group of 5 • finally we add together the multipliers – 30 and 7 to get 37. • thus we know that 225 ÷ 6 = 37 r3

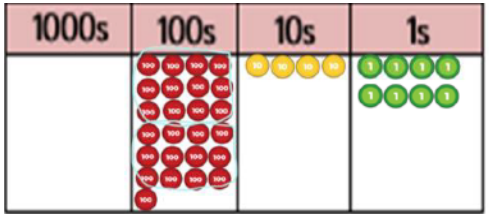
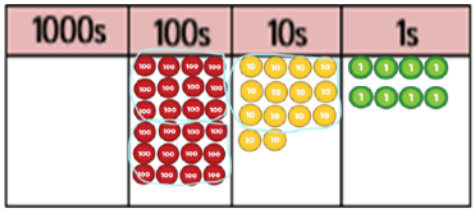
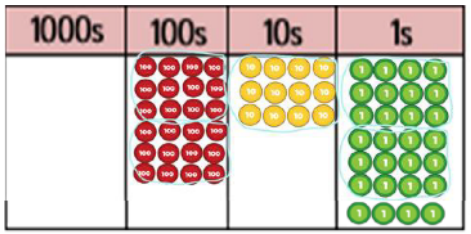
Stage 4		Children use the column chunking method without remainders.  **Hint:** Chunking can be used to perform division calculations without use of a number line. Here for example we: • begin with 96 and subtract 10 lots of 6 to get 36 • we then subtract 6 lots of 6 to get 0 • finally we add together the multipliers – 10 and 6 to get 36. • thus we know that 96 ÷ 6 = 16

Stage 4		Children use the column chunking method with remainders.  **Hint:** Chunking can be used to perform division calculations without use of a number line whether or not there is a remainder. Here for example we: • begin with 279 and subtract 10 lots of 13 to get 149 • we then subtract another 10 lots of 13 to get 19 • next we subtract another lot of 13 to get 6, from which we cannot subtract another lot of 13 • finally we add together the multipliers – 10 and 6 to get 36. • finally we add together the multipliers – 10, 10 and 1 to get 21 • thus we know that 279 ÷ 13 = 21 r6

Stage 5	Children complete short division using place value counters to group. 615 ÷ 5 = 123  1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 15 ones?	Children represent the place value counters pictorially. 615 ÷ 5 = 123  	Children use short division, without remainders. 

Stage 5	Children complete short division using place value counters to group. 618 ÷ 5 = 123 r3  1. Make 618 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 18 ones? 7. What is the remainder?	Children represent the place value counters pictorially. 618 ÷ 5 = 123 r3  	Children use short division converting remainders to fractions and decimals. 376 ÷ 5 = 75 1/5

Stage 5	Children complete long division using place value counters to group. 2544 ÷ 12 = 212  We can't group 2 thousands into groups of 12 so will exchange them.  We can group 24 hundreds into groups of 12 which leaves with 1 hundred. 02 12|2544 24 1  After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens. 021 12|2544 24 14 12 2  After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder. 0212 12|2544 24 14 12 24 24 0	Children use long division, without remainders. 468 ÷ 12 = 391  Video: Long division

Stage 5	Children complete long division using place value counters to group, with remainders. 2548 ÷ 12 = 212 r4  We can't group 2 thousands into groups of 12 so will exchange them.  We can group 24 hundreds into groups of 12 which leaves with 1 hundred. 02 12|2548 24 1  After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens. 021 12|2548 24 14 12 2  After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves remainder 4. 0212 12|2548 24 14 12 28 24 4	Children use long division, leaving remainders. 2548 ÷ 12 = 212 r4 0212 12|2548 24 14 12 28 24 4 Long division converting remainders to fractions and decimals 2546 ÷ 12 = 212 4/12 2546 ÷ 12 = 212 1/3 . 2546 ÷ 12 = 212.3