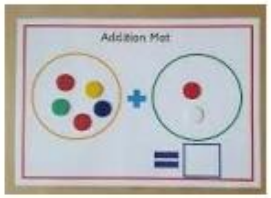
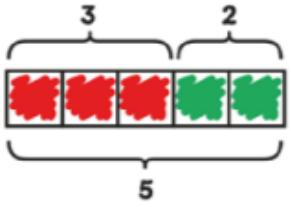
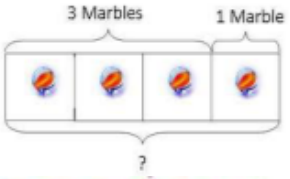
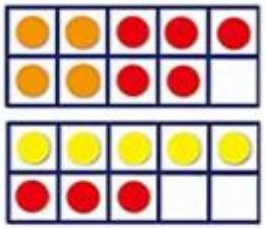
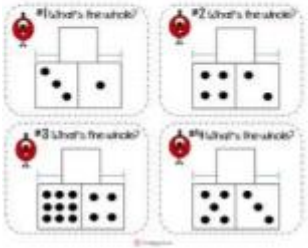
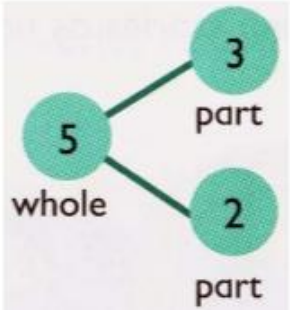
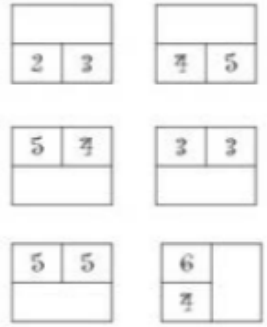
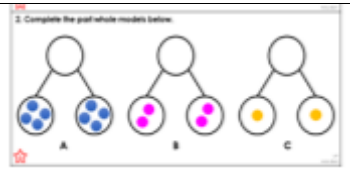
Addition - EYFS

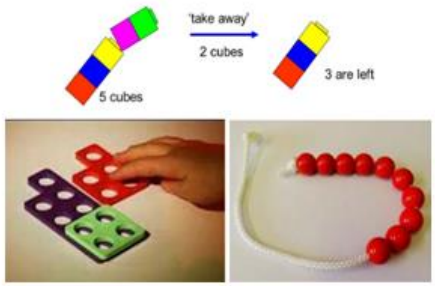
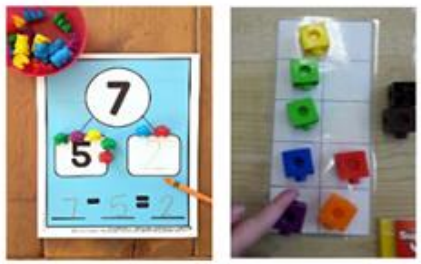
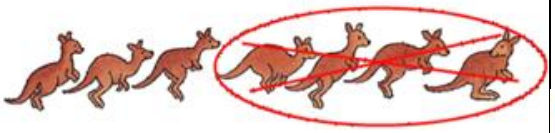
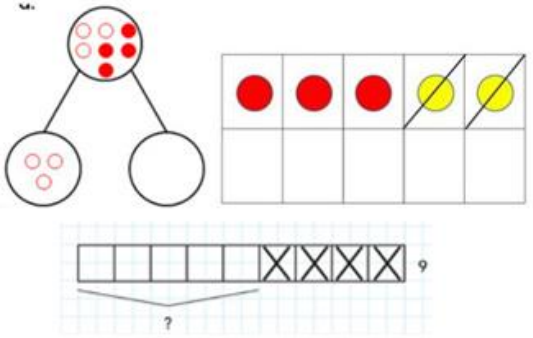
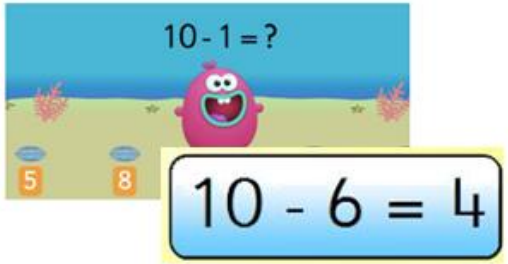
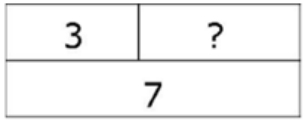
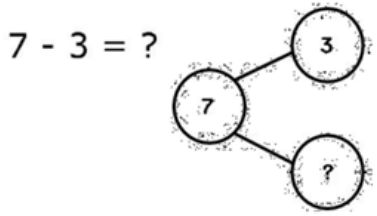
Key mathematical vocabulary
add, more, and make, sum, total, altogether, double, one more, two more … ten more, how many more to make …? how many more is … than …? how much more is …? take away, how many are left/left over? how many have gone? one less, two less, ten less … how many fewer is … than …? how much less is …? difference between

Objectives	Concrete	Pictorial	Abstract
Understand the one more/ one less relationship between consecutive numbers. Explore the composition of numbers to 10. Recall number bonds for numbers 1-10. ELG: Recall number bonds to 5. Language to be used: Add, plus, altogether, is the same as, equals, is equal to, parts and wholes, total, more than.	   Use classroom resources for children to manipulate.  Use specific maths resources such as counters, snap cubes, numicon etc.    Use visual supports such as ten frames, part part whole and addition mats, with the physical objects and resources that can be manipulated.	    	A focus on symbols and numbers to form a calculation. 5+2=7   *No expectation for children to be able to record a number sentence/addition in calculation.

Subtraction - EYFS

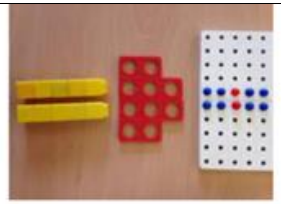
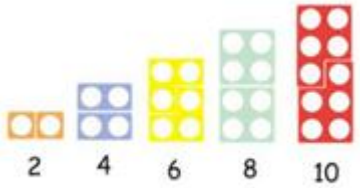
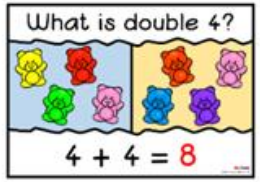
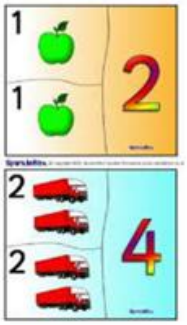
Key mathematical vocabulary:
addition and subtraction, add, more, and make, sum, total, altogether, double, one more, two more … ten more, how many more to make …? how many more is … than …? how much more is …? take away, how many are left/left over? how many have gone? one less, two less, ten less … how many fewer is … than …? how much less is …? difference between

Objectives	Concrete	Pictorial	Abstract
Understand the one more/ one less relationship between consecutive numbers. Explore the composition of numbers to 10. Recall number bonds for numbers 1-10. ELG: Recall number bonds to 5, including subtraction facts. Language to be used: Take away, subtract, minus, how many left, leaves, less than, fewer, the difference.	 Use classroom resources for children to manipulate.  Use specific maths resources such as snap cubes, numicon, bead strings etc. 	 A group of pictures for children to cross out or cover quantities to support subtraction.  Use visual support such as tens frames, part part whole and bar model with pictures/icons.	A focus on symbols and numbers to form a calculation.    *No expectation for children to be able to record a number sentence/addition in calculation.

	Use visual support such as tens frames, part part whole and subtraction mats, with the physical objects and resources that can be manipulated.		

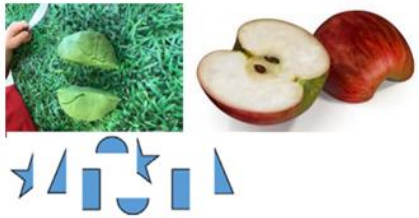
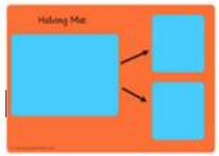
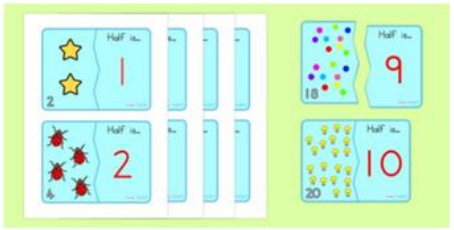
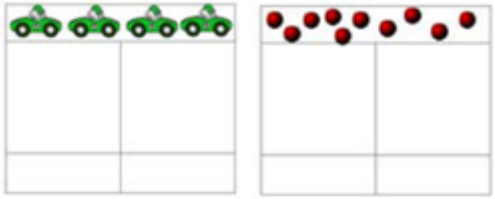
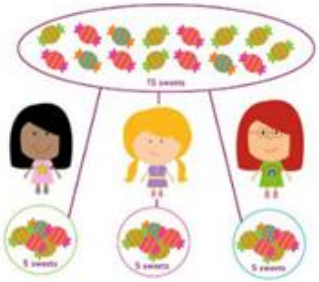
Multiplication - EYFS

Key mathematical vocabulary
Sharing, doubling, halving, number patterns

Objectives	Concrete	Pictorial	Abstract
Explore the composition of numbers to 10. Recall number bonds for numbers 1-10. ELG: Recall some number bonds to 10, including double facts. Explore and represent patterns within numbers up to 10, including double facts. Language to be used: Double, equal groups, groups of, lots of, the same as, equals.	  Counting and other maths resources to make 2 equal groups.    Physical and real life examples that encourage children to see the concept of doubling as adding two equal groups.	  Pictures and icons that encourage children to see the concept of doubling as adding two equal groups.	

Division - EYFS

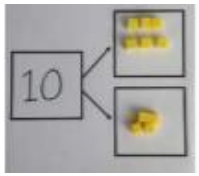
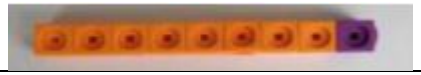
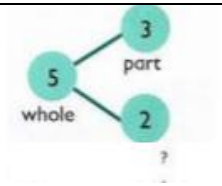
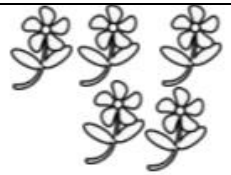
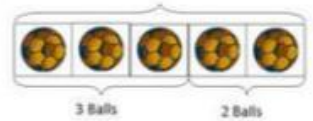
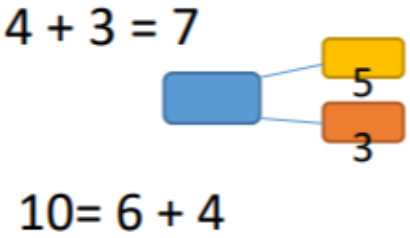
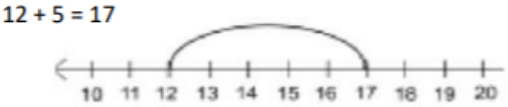
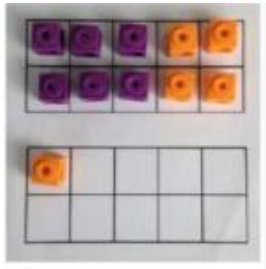
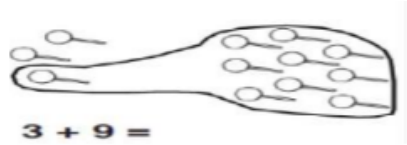
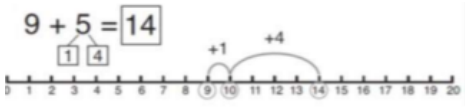
Key mathematical vocabulary
Sharing, doubling, halving, number patterns

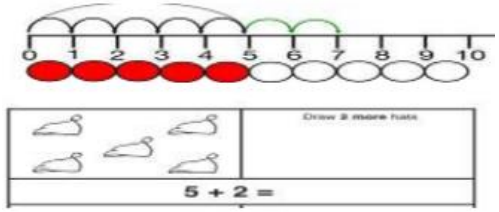
Objectives	Concrete	Pictorial	Abstract
Explore the composition of numbers to 10. Recall number bonds for numbers 1-10. ELG: Explore and represent patterns within numbers and how quantities can be distributed equally. Language to be used; Share, half, halves, the same as, equals, whole.	 Children have the opportunity to physically cut objects, food or shapes in half.  Counting and other maths resources for children to share into two equal groups.  Use visual supports such as halving mats and part part whole, with the physical objects and resources that can be manipulated.  Counting and other maths resources for children to explore sharing between 3 or more. 	 Pictures and icons that encourage the children to see the concept of halving in relation to subsitising, addition and subtraction knowledge i.e. knowing 4 is made of 2 groups of 2, so half of 4 is 2.  Bar model with pictures or icons to support understanding of finding 2 equal parts of a number, to further understand how two halves make a whole. Pictures for children to createand visualise 3 or more equal groups. 	

Addition – Year 1 (numicon and other maths resources are used to support learning)

Key mathematical vocabulary

Addition, add, more, and make, sum, total, altogether, double, near double, half, halve one more, two more … ten more how many more to make …? how many more is … than …? how much more is …?

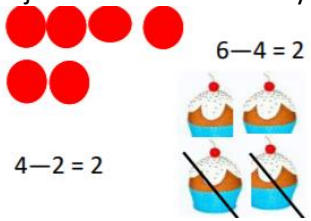
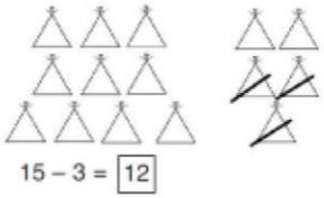
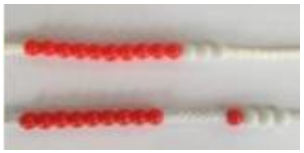
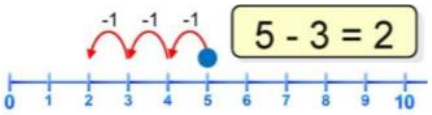
Objectives	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part- whole model	   Use part part whole model. Use cubes to add two numbers together as a group or in a bar. 	    Use pictures to add two numbers together as a group or in a bar.	 Use the part-part whole diagram as shown above 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.	 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 Place the larger number in your head 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 + 4 = 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?

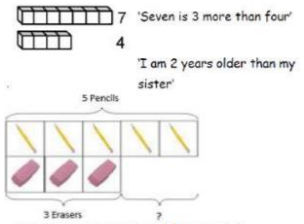
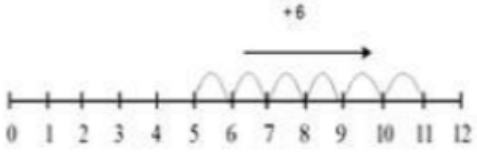
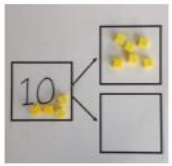
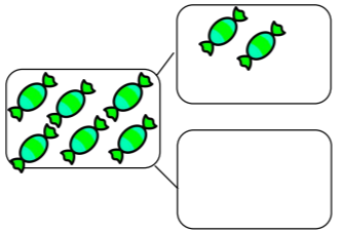
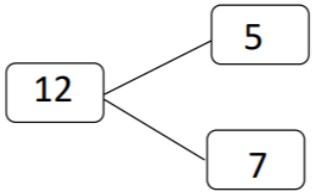
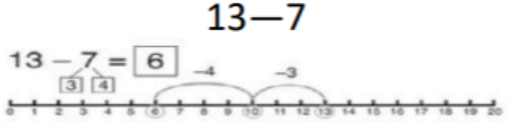
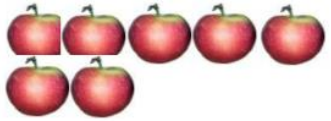
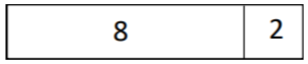
Represent & use number bonds and related subtraction facts within 20	 2 more than 5.		Emphasis should be on the language '1 more than 5 is equal to 6.' '2 more than 5 is 7.' '8 is 3 more than 5.'

Subtraction – Year 1

Key mathematical vocabulary

Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … how many fewer is … than …? how much less is …? difference between, equals is the same a,s number bonds/pairs missing number

Objectives	Concrete	Pictorial	Abstract
Taking away ones	Use physical objects, counters, cubes etc to show how objects can be taken away. 	 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	Count on using a number line to find the difference.	Hannah has12 sweets and her sister has 5. How many more does Hannah have than her sister?

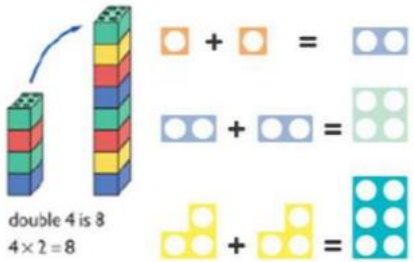
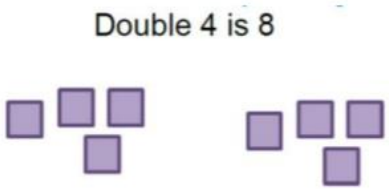
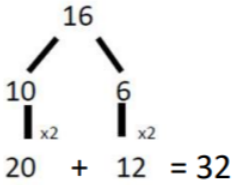
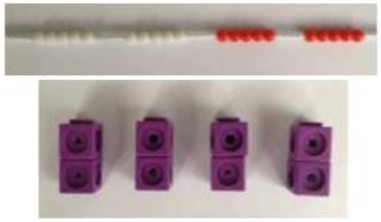
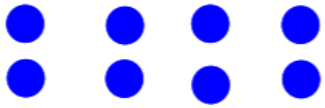
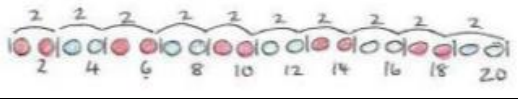
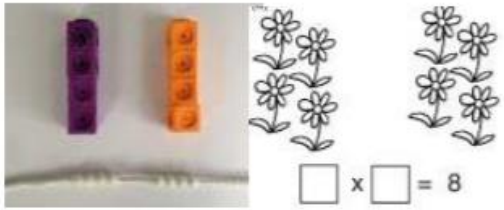
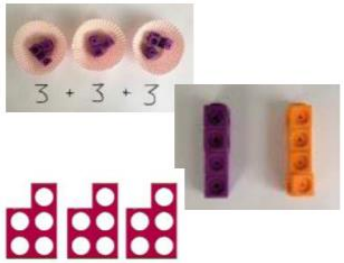
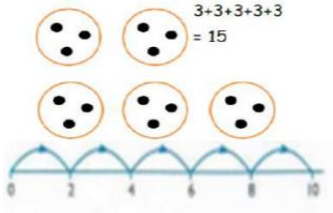
	 Lay objects to represent bar model.		
Represent and use number bonds and related subtraction facts within 20. Part part whole	 Link to addition. Use PPW model to model the inverse. If 10 is the whole and 6 is one of the arts, what's the other part? 10—6 = 4	 Use pictorial representations to show the 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

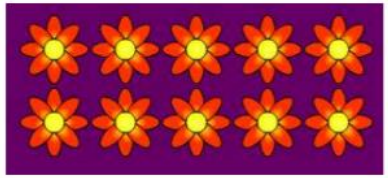
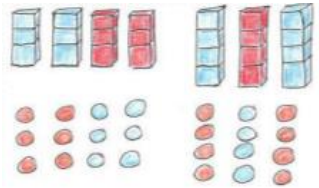
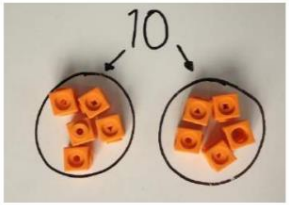
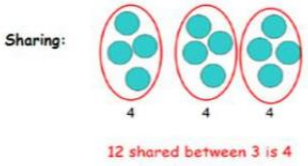
Multiplication – Year 1

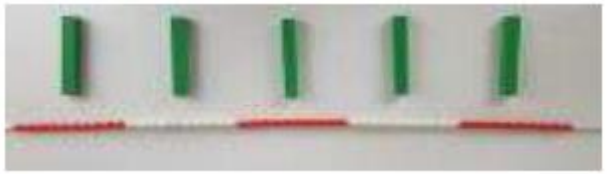
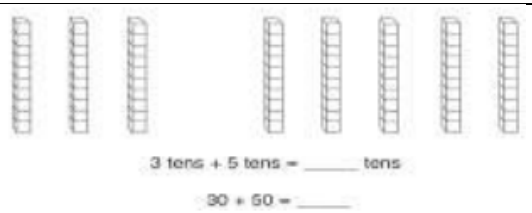
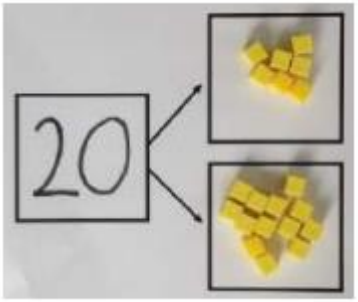
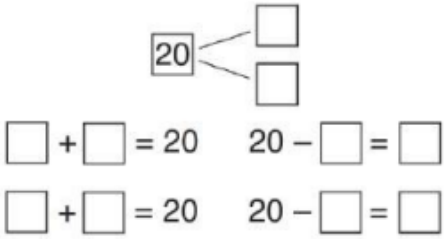
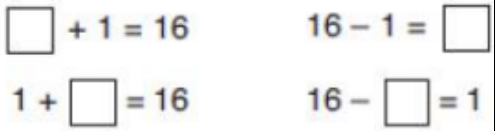
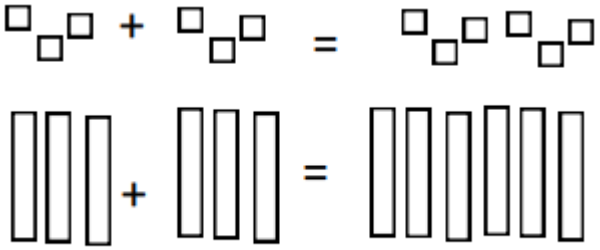
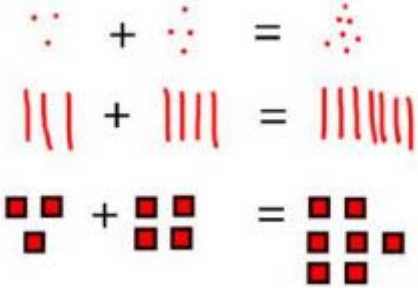
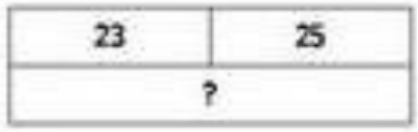
Key mathematical vocabulary

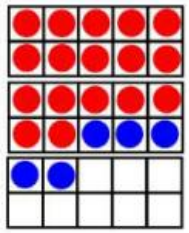
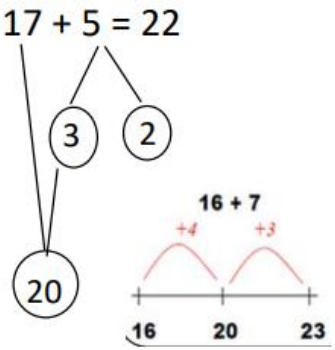
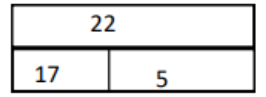
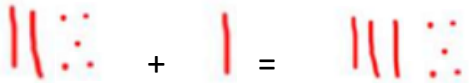
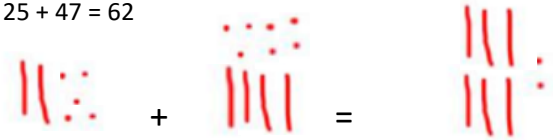
Multiplication, multiply, multiplied by, multiple, division, dividing, grouping, sharing, doubling, halving, array, number patterns

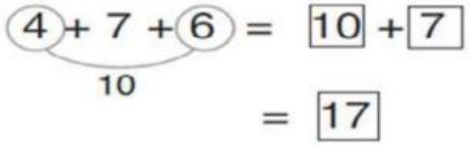
Objectives	Concrete	Pictorial	Abstract

Doubling	Use practical activities using manipulatives 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
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
Repeated addition	 Use different objects to add equal groups	Use pictorial including number lines to solve problems  There are 3 sweets in one bag. How many sweets are in 5 bags altogether?	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 understanding 	3 x 2 = 6 2 x 5 = 10
Division – Year 1			
Key mathematical vocabulary Multiplication, multiply, multiplied by, multiple, division, dividing, grouping, sharing, doubling, halving, array, number patterns			
Objectives	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.  	12 shared between 3 is 4
Addition – Year 2			
Key mathematical vocabulary Addition, add, more, and make, sum, total, altogether, double, near double, half, halve one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts tens boundary			
Objectives	Concrete	Pictorial	Abstract

Adding multiples of ten	50 = 30 = 20  Model using dienes and bead strings	 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 known facts		Children draw representations of H, T and O 	3 + 4 = 7 *leads to* 30 + 40 = 70 *leads to* 300 + 400 = 700
Bar model	 3 + 4 = 7 	 7 + 3 = 10	 23 + 25 = 48

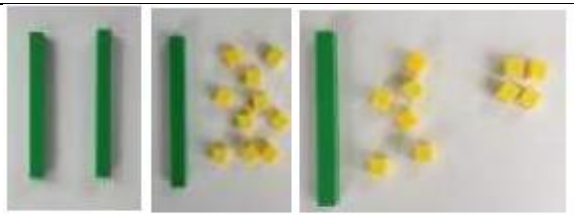
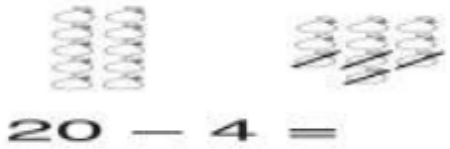
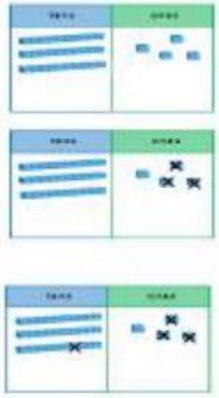
Add a two digit number and ones	 17 + 5 = 22 Use ten frame to make 'magic ten Children explore the pattern. 17 + 5 = 22 27 + 5 = 32	Use part part whole and number line to model. 	17 + 5 = 22 Explore related facts 17 + 5 = 22 5 + 17 = 22 22—17 = 5 22—5 = 17 
Add a 2 digit number and tens	 25 + 10 = 35 Explore that the ones digit does not change	Draw base 10: 25 + 10 = 35 	27 + 10 = 37 27 + 20 = 47 27 + □ = 57
Add two 2-digit numbers	 Model using dienes , place value counters and numicon	Draw base 10: 25 + 47 = 62 	Donut method: 25 + 47 = 72 20 + 40 = 60 5 + 7 = 12 Then column method: 60 + 12 72

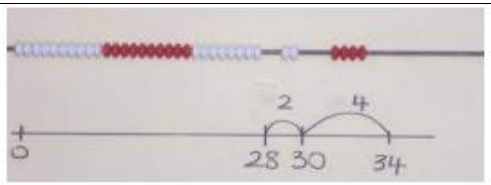
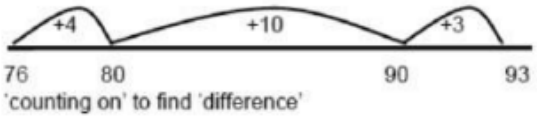
Add three 1-digit numbers	 Combine to make 10 first if possible, or bridge 10 then add a third digit.	 Regroup and draw representation. 	 Combine the two numbers that make/ bridge ten then add on the third.

Subtraction – Year 2

Key mathematical vocabulary

Addition, add, more, and make, sum, total, altogether, double near, double, half, halve one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts tens boundary

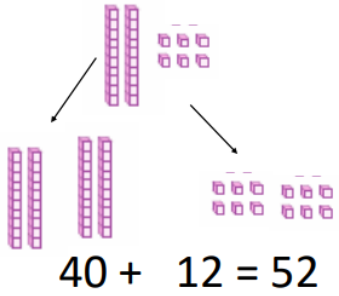
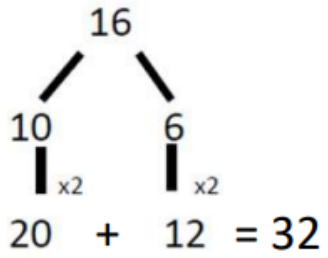
Objectives	Concrete	Pictorial	Abstract
Regroup a ten into ten ones	 Use a PV chart to show how to change a ten into ten ones, use the term 'take and make'		20 – 4 = 16 Then column subtraction.
Partitioning to subtract without regrouping 'Friendly numbers'	34—13 = 21  Use Dienes to show how to partition the number when subtracting without regrouping.	Children draw representations of Dienes and cross off.  43—21 = 22	43 – 21 = 22

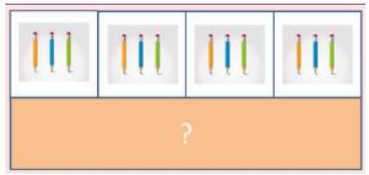
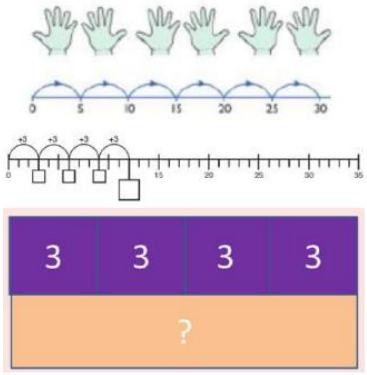
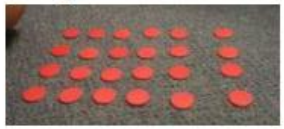
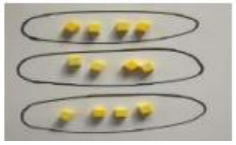
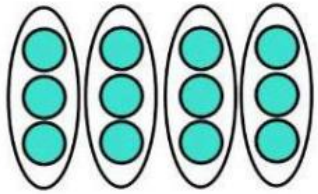
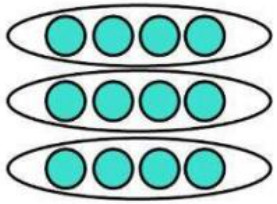
Make ten strategy Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.	 34—28 Use a bead bar or bead strings to model counting to next ten and the rest.	 'counting on' to find 'difference' Use a number line to count on to the next ten and then the rest.	

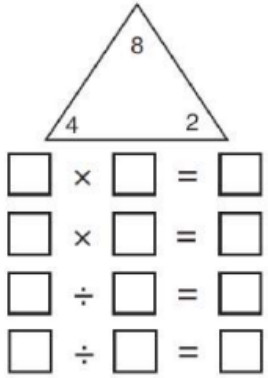
Multiplication – Year 2

Key mathematical vocabulary

Multiplication, multiply, multiplied by, multiple, groups of, times once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, grouping, sharing, share, share equally left, left over one each, two each, three each … ten each group in pairs, threes … tens, equal groups of, doubling, halving, array row, column, number patterns, multiplication table, multiplication fact, division fact

Objectives	Concrete	Pictorial	Abstract
Doubling	Model doubling using dienes and PV counters.  40 + 12 = 52	Draw pictures and representations to show how to double numbers.	Partition a number and then double each part before recombining it back together.  20 + 12 = 32
Counting in multiples of 2,3,4,5,10 from 0 (repeated addition)	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models.	Number lines, counting sticks and bar models should be used to show representation of counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25, 30

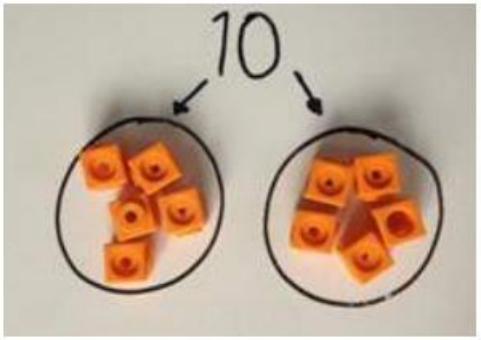
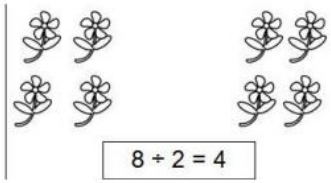
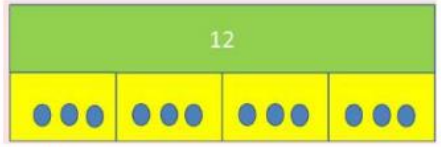
	 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40  		$4 \times 3 = \square$
Multiplication is commutative	Create arrays using counters and cubes and Numicon.    Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer.  	Use representations of arrays to show different calculations and explore commutativity.  	$12 = 3 \times 4$ $12 = 4 \times 3$ 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

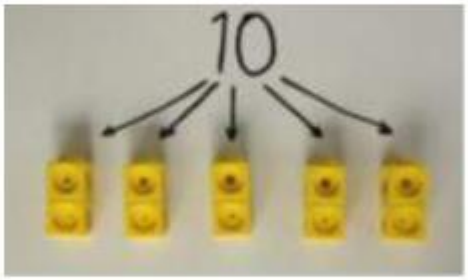
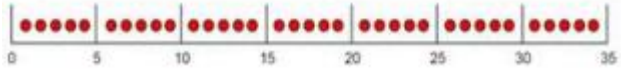
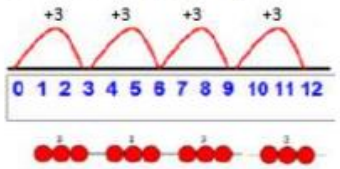
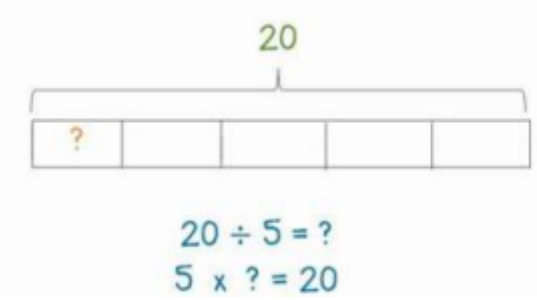
Using the inverse *This should be taught alongside division, so pupils learn how they work alongside each other.*			2 x 4 = 8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 8 = 2 x 4 8 = 4 x 2 2 = 8 ÷ 4 4 = 8÷ 2 Show all 8 related fact family sentences.

Division – Year 2

Key mathematical vocabulary

Multiplication, multiply, multiplied by, multiple, groups of, times once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, grouping, sharing, share, share equally left, left over one each, two each, three each … ten each group in pairs, threes … tens, equal groups of, doubling, halving, array row, column, number patterns, multiplication table, multiplication fact, division fact

Objectives	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 Children use bar modelling to show and support understanding.  12 ÷ 4 = 3	12 ÷ 3 = 4

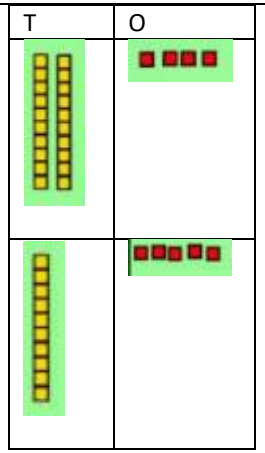
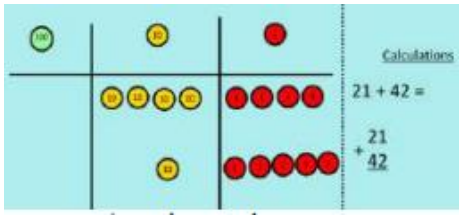
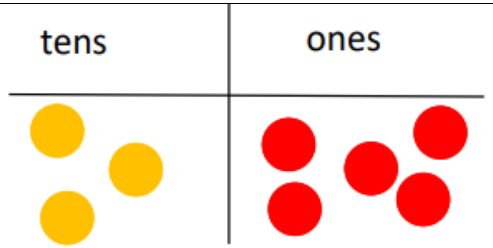
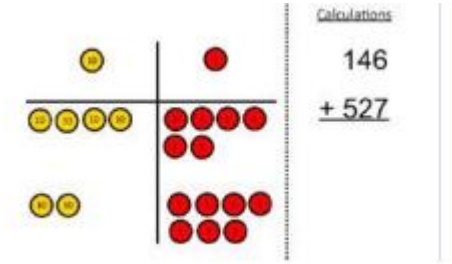
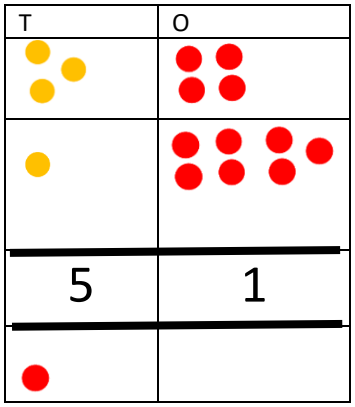
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.   	Use number lines for grouping  12 ÷ 3 = 4 Think of the bar as a whole split it into the number of groups you are dividing by and work out how many would be within each group.  	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

Addition – Year 3

Key mathematical vocabulary

Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary

Objectives	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 counters using a hundreds, tens and ones frame.	

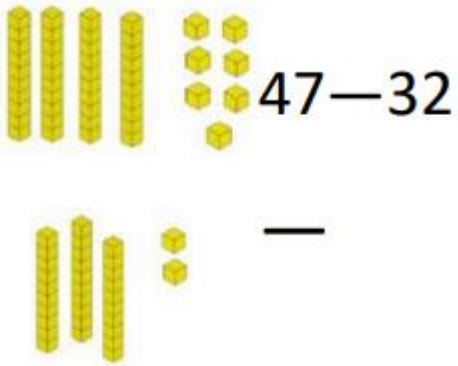
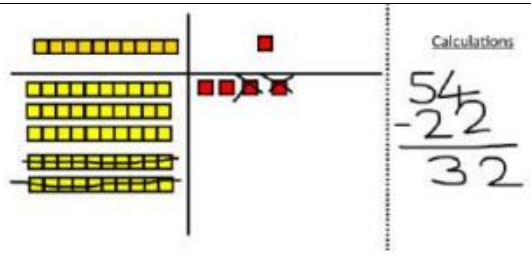
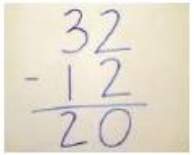
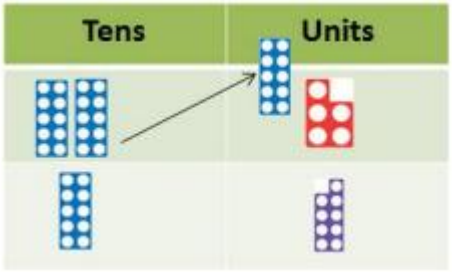
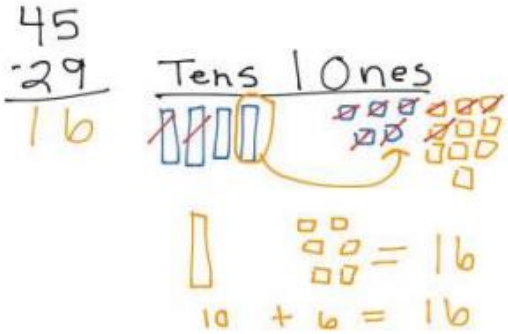
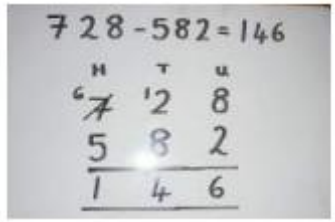
	 Move towards using place value counters. Move towards using place value counters. 		2 2 3 + 1 1 4 3 3 7 Add the ones first, then the tens, then the hundreds.
Column addition with regrouping.	Exchange ten ones for a ten. Model using pv counters and base 10 materials. 	 Children can draw a representation of the grid to further support their understanding, carrying the ten **underneath** the line.	20 + 5 40 + 8 60 + 13 = 73 Start by partitioning the numbers before formal column to show the exchange. 536 + 85 621 1 1

Subtraction – Year 3

Key mathematical vocabulary

Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one

hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary

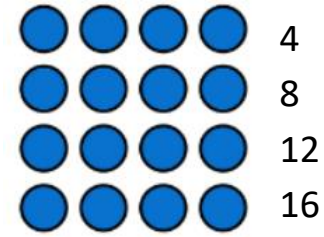
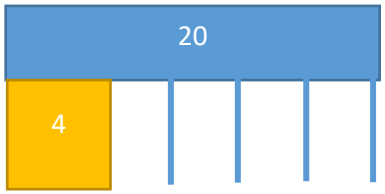
Objectives	Concrete	Pictorial	Abstract
Column subtraction without regrouping (friendly numbers)	 Use base 10 or pv counters.	 Darw representations to support understanding	Intermediate step may be needed to lead to clear subtraction understanding. 
Column subtraction with regrouping	 Begin with base 10 or pv counters. Model the exchange of a ten into ten ones. Use the phrase 'take and make' for exchange.	 Children may draw base ten or PV counters and cross off.	 Move to the formal method.

Multiplication – Year 3

Key mathematical vocabulary

Multiplication, multiply, multiplied by multiple, factor groups of times product once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into left, left over, remainder, grouping, sharing, share, share equally, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, halving, array row, column, number patterns, multiplication table, multiplication fact, division fact

Objectives	Concrete	Pictorial	Abstract
		Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles	

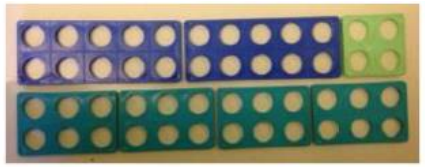
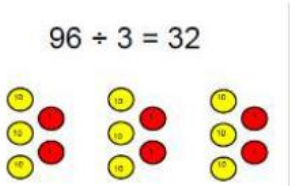
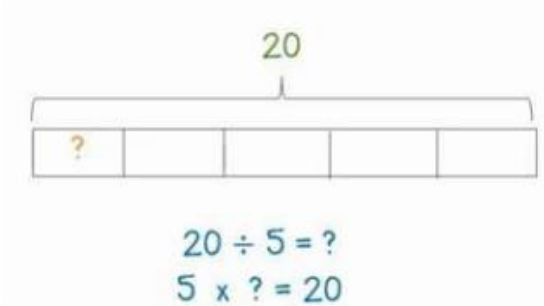
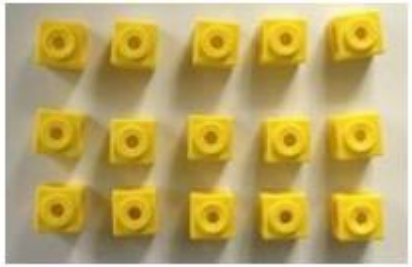
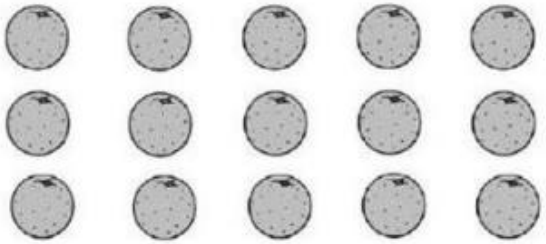
		in the different columns to show their thinking as shown below. Bar model are used to explore missing numbers. Arrays    	X 3 7 2 1

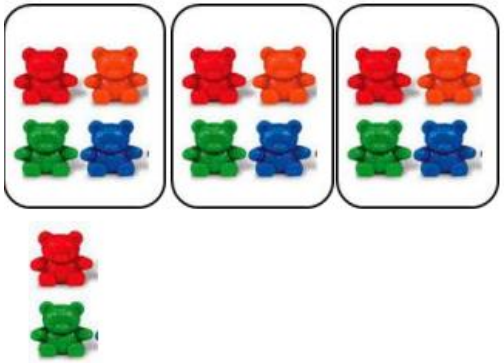
Division – Year 3

Key mathematical vocabulary

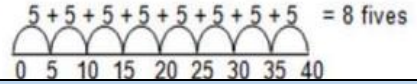
Multiplication, multiply, multiplied by multiple, factor groups of times product once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into left, left over, remainder, grouping, sharing, share, share equally, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, halving, array row, column, number patterns, multiplication table, multiplication fact, division fact

Objectives	Concrete	Pictorial	Abstract

Division as grouping	Use cubes, counters or place value counters to aid understanding.  24 divided into groups of 6 = 4 	Continue to use bar modelling to aid solving division problems. 	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

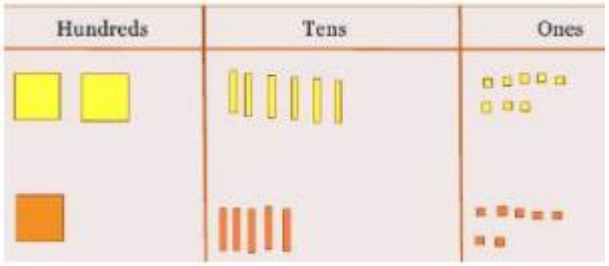
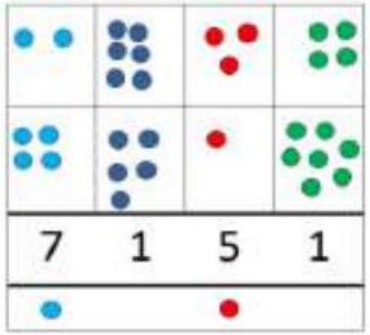
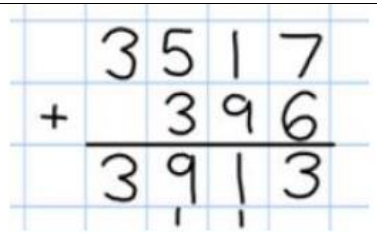
Division with remainders	14 ÷ 3 = Divide counters between groups and see how much is left over 	Draw dots and group them to divide an amount and clearly show a remainder.  	Complete written divisions and show the remainder using r. 

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



Addition – Year 4

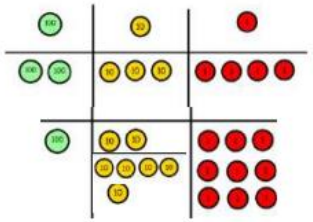
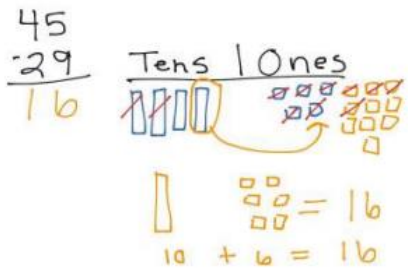
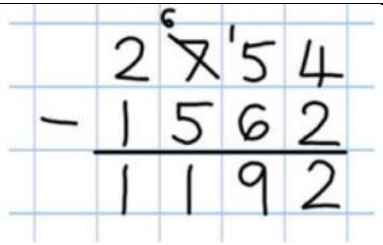
Key mathematical vocabulary
Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more… ten more… one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, inverse

Objectives	Concrete	Pictorial	Abstract
Add numbers with up to 4 digits	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.  	 Draw representations using a pv grid.	 Continue from previous work to carry hundreds as well as tens. Relate to money and measures.

Subtraction – Year 4

Key mathematical vocabulary

Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more… ten more… one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, inverse

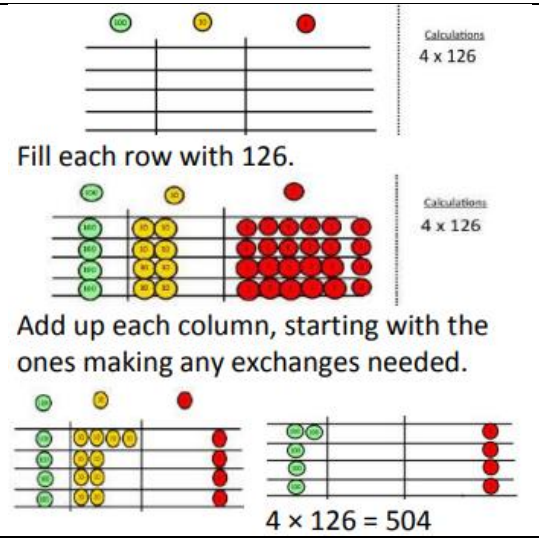
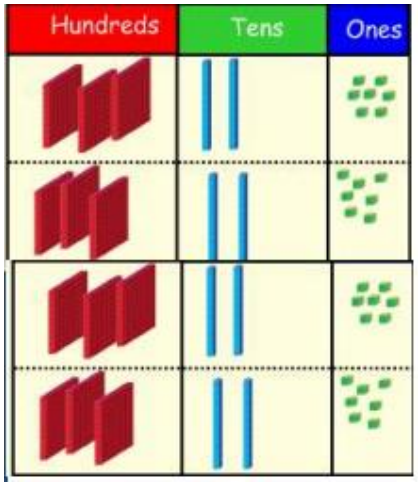
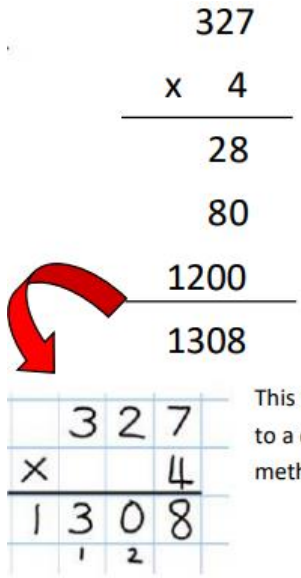
Objectives	Concrete	Pictorial	Abstract
Subtracting tens and ones. Year 4 subtract with up to 4 digits. *Introduce decimal subtraction through context of money*	234 - 179  Model process of exchange using Numicon, base ten and then move to PV counters.	Children to draw pv counters and show their exchange.  Children may draw base ten or PV counters and cross off.	 Use the phrase ‘take and make’ for exchange.

Multiplication – Year 4

Key mathematical vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, left, left over, remainder, grouping, sharing, share, share equally, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, halving, array, row, column, number patterns, multiplication table, multiplication fact, division fact, inverse, square, squared cube, cubed

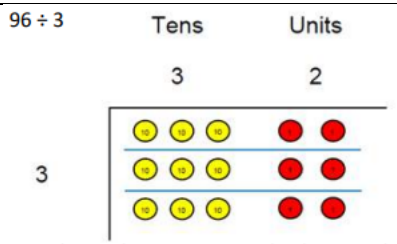
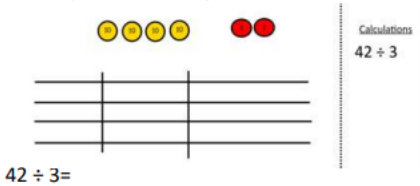
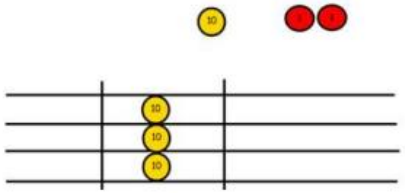
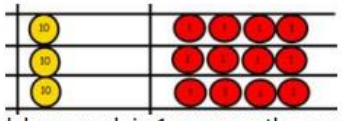
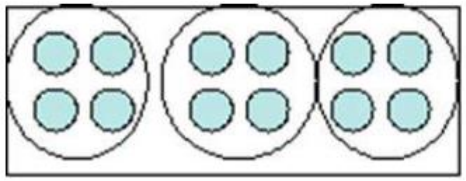
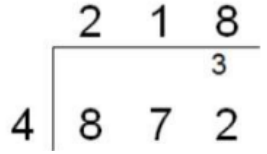
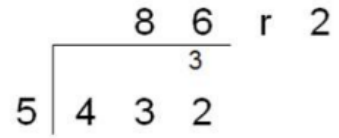
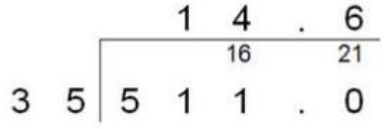
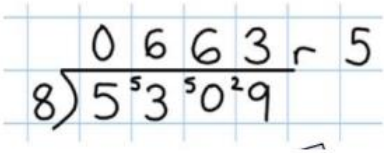
Objectives	Concrete	Pictorial	Abstract
Grid method recap from year 3 for 2 digits x 1 digit. Move to multiplying 3 digit numbers by 1 digit. (year 4 expectation)	Use place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows		

			
Column Multiplication	Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642  It is important at this stage that they always multiply the ones first. The corresponding long multiplication is modelled alongside		 This may lead to a compact method.

Division – Year 4

Key mathematical vocabulary

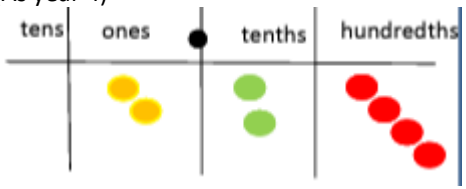
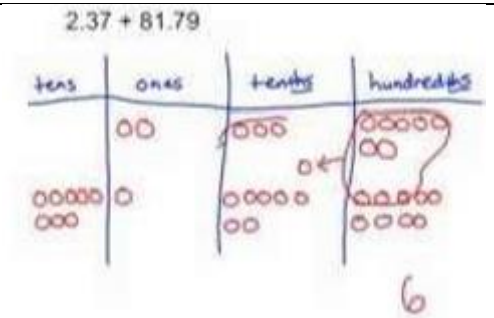
Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, left, left over, remainder, grouping, sharing, share, share equally, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, halving, array, row, column, number patterns, multiplication table, multiplication fact, division fact, inverse, square, squared cube, cubed

Objectives	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division	96 ÷ 3  Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.  We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.	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.  

Addition – Year 5

Key mathematical vocabulary

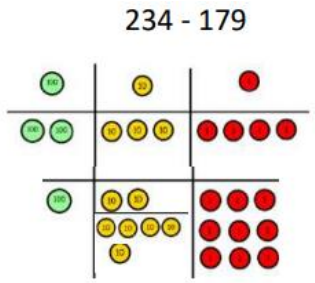
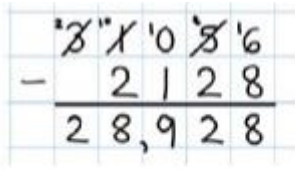
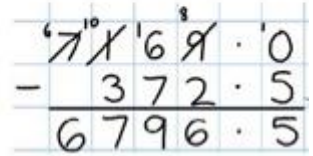
Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse

Objectives	Concrete	Pictorial	Abstract
Add numbers with more than 4 digits. Add decimals with 2 decimal places, including money.	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand. (As year 4)  Introduce decimal place value counters and model exchange for addition.		72.8 + 54.6 127.4 1 1 

Subtraction – Year 5

Key mathematical vocabulary

Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse

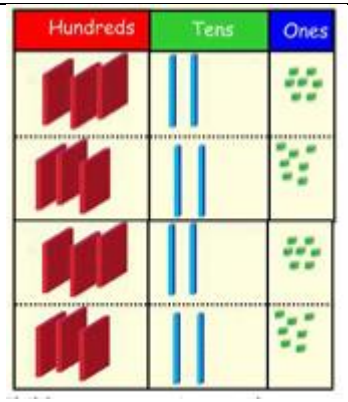
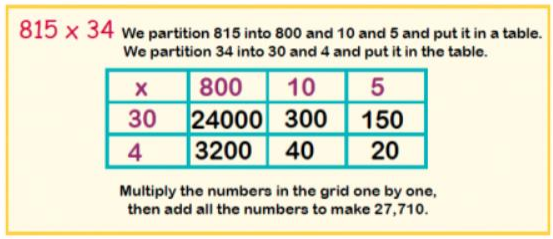
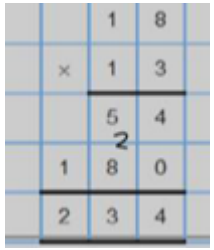
Objectives	Concrete	Pictorial	Abstract
Subtract with at least 4 digits, including money and measures. *Subtract with decimal values, including mixtures of integers and decimals and*	As year 4 	Children to draw pv counters and show their exchange – see year 3	 Use zeros for place-holders. 

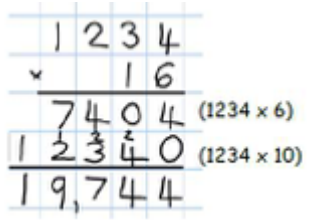
aligning the decimal.	Model process of exchange using Numicon, base ten and then move to PV counters.		

Multiplication – Year 5

Key mathematical vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, left, left over, remainder, grouping, sharing, share, share equally, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, halving, array, row, column, number patterns, multiplication table, multiplication fact, division fact, inverse, square, squared cube, cubed

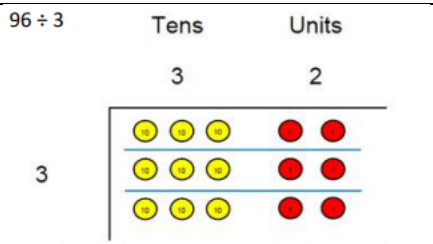
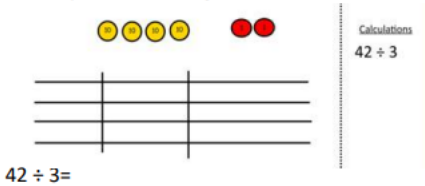
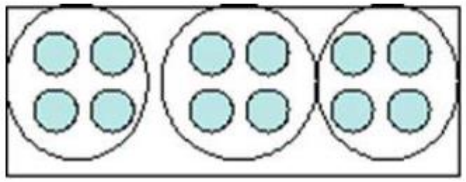
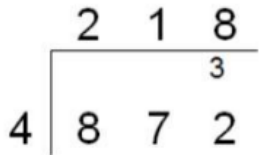
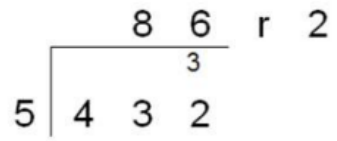
Objectives	Concrete	Pictorial	Abstract
Column multiplication for 3 and 4 digits x 1 digit.	 It is important at this stage that they always multiply the ones first. Children can continue to be supported by place value counters at the stage of multiplication. This would initially be done where there is no regrouping. 321 x 2 = 642.	Optional grid method: 327 x 4 = 1308 300 x 4 = 1200 20 x 4 = 80 7 x 4 = 28 | x	300	20	7
---	---	---	---
4	1200	80	28		
Column multiplication	Manipulatives may still be used with the cooresponding long multiplication modelled alongside.	Optional grid method: 815 x 34: 	 18 x 3 on the first row. (x 3 = 24, carrying the 2 for 20 then 1 x 3)

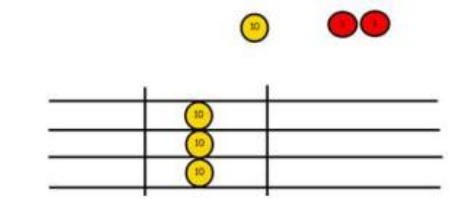
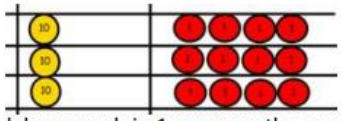
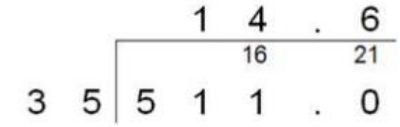
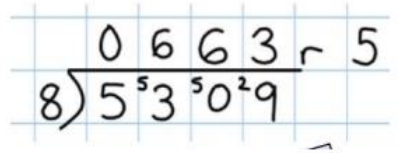
			18 x 10 on the 2nd row. Show multiplying by 10 putting zero in the ones column first (place holder). 

Division – Year 5

Key mathematical vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, left, left over, remainder, grouping, sharing, share, share equally, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, halving, array, row, column, number patterns, multiplication table, multiplication fact, division fact, inverse, square, squared cube, cubed

Objectives	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division (As in year 4)	96 ÷ 3  Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.	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.

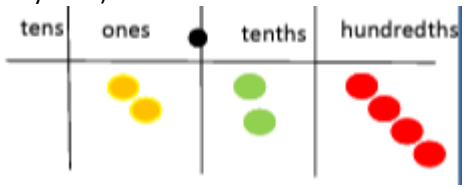
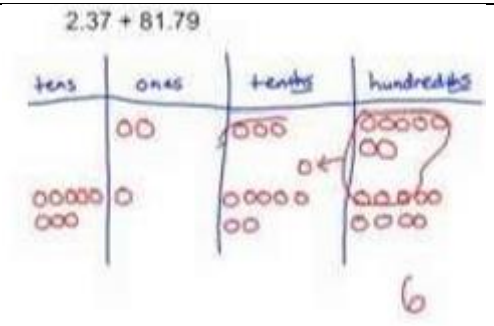
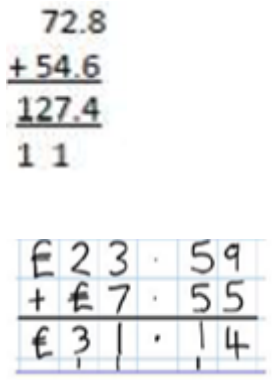
	 We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.		 
Divide at least 3 digit numbers by 2 digit. Short Division - Factorisation	As above	As above	As above. Children list factors. 1456 divided by 16. Factor pairs of 16: 1 and 16 2 and 8 4 and 4 Children choose a pair to use and follow the short division method (shown above) 1456 divided by 2 = 728 728 divided by 8 = 91 The children can choose which way around they divide by. **1456 divided by 16 = 91**
Divide at least 3 digit numbers by 2 digit. Short Division – List multiples	As above	As above	As above. Children work out and list the multiples 1456 divided by 16. Multiples of 16:

			1 x 16 = 16 2 x 16 = 32 3 x 16 = 48 4 x 16 = 64 5 x 16 = 80 6 x 16 = 96 7 x 16 = 112 8 x 16 = 128 Children use the multiples to complete the calculation using short division (shown above) **1456 divided by 16 = 91**

Addition – Year 6

Key mathematical vocabulary

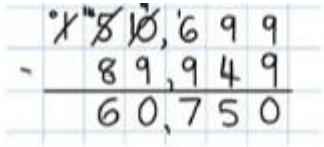
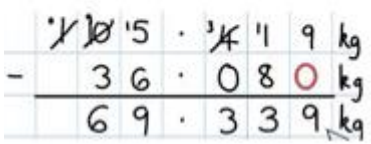
Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse

Objectives	Concrete	Pictorial	Abstract
Add several numbers of increasing complexity. Including adding money, measure and decimals with different numbers of decimal points.	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand. (As year 4)  Introduce decimal place value counters and model exchange for addition.		

Subtraction – Year 6

Key mathematical vocabulary

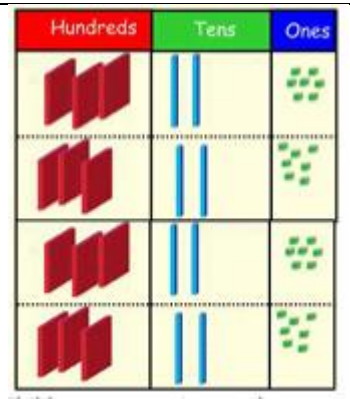
Addition, add, more, and make, sum, total, altogether, double, near double, half, halve, one more, two more … ten more … one hundred more, how many more to make …? how many more is … than …? how much more is …? Subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … one

hundred less, how many fewer is … than …? how much less is …? difference between, equals is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse			
Objectives	Concrete	Pictorial	Abstract
Subtract with increasingly large and more complex numbers and decimal values.			 

Multiplication – Year 6

Key mathematical vocabulary

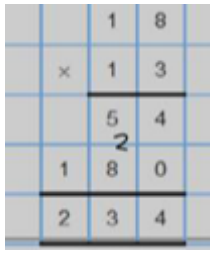
Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, left, left over, remainder, grouping, sharing, share, share equally. one each, two each, three each … ten each, group in, pairs, threes … tens equal groups of, doubling, halving, array, row, column, number patterns, multiplication table, multiplication fact, division fact, inverse, square, squared cube, cubed

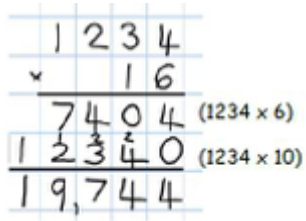
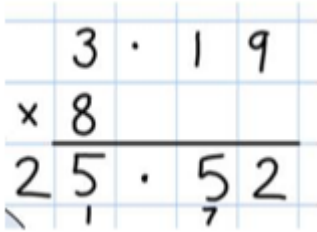
Objectives	Concrete	Pictorial	Abstract
Column multiplication for 3 and 4 digits x 1 digit. (As in year 5)	 It is important at this stage that they always multiply the ones first. Children can continue to be supported by place value counters at the stage of multiplication. This would initially be done where there is no regrouping. 321 x 2 = 642.	Optional grid method: 327 x 4 = 1308 300 x 4 = 1200 20 x 4 = 80 7 x 4 = 28 | x | 300 | 20 | 7 | | 4 | 1200 | 80 | 28 |	

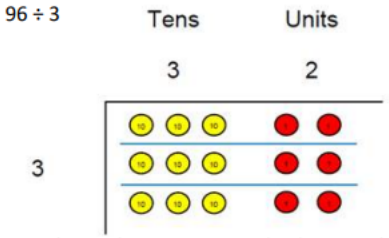
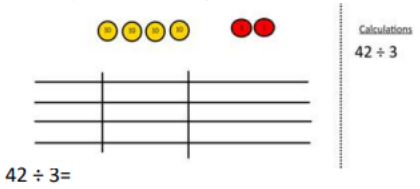
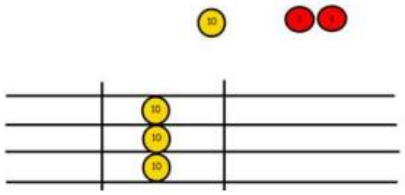
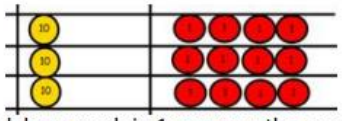
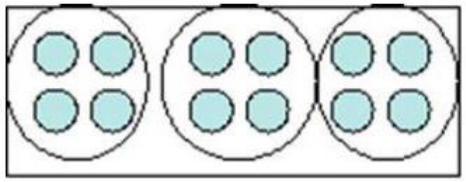
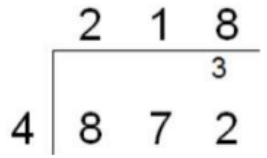
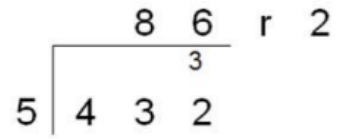
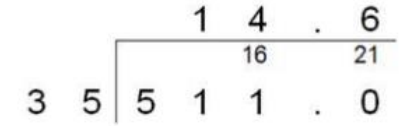
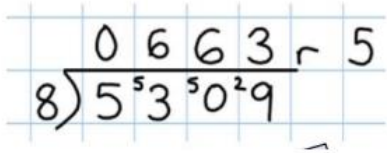
<table>
<tr>
<td>Column multiplication

(As in year 5)</td>
<td>Manipulatives may still be used with the cooresponding long multiplication modelled alongside.</td>
<td>Optional grid method:

815 x 34:

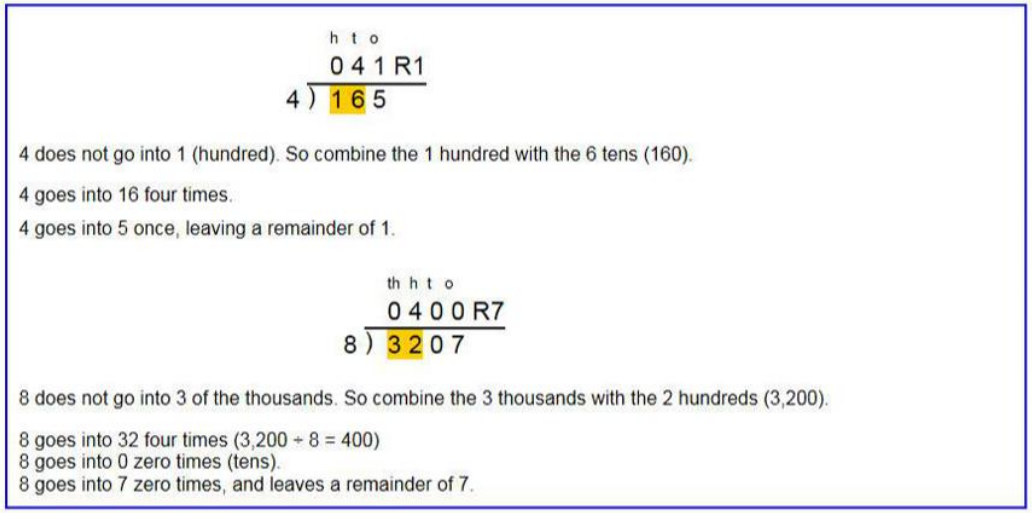
815 x 34 We partition 815 into 800 and 10 and 5 and put it in a table. We partition 34 into 30 and 4 and put it in the table.
<table><tr><td>x</td><td>800</td><td>10</td><td>5</td></tr><tr><td>30</td><td>24000</td><td>300</td><td>150</td></tr><tr><td>4</td><td>3200</td><td>40</td><td>20</td></tr></table>Multiply the numbers in the grid one by one, then add all the numbers to make 27,710.</td>
<td> 

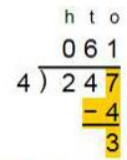
18 x 3 on the first row.
(x 3 = 24, carrying the 2 for 20 then 1 x 3)
18 x 10 on the 2nd row. Show multiplying by 10 putting zero in the ones column first (place holder).
 
</td>
</tr>
<tr>
<td>Multiplying decimals up to 2 decimals places by a single digit.</td>
<td></td>
<td></td>
<td>Remind the children that the single digit belongs in the ones column. Line up the decimal points in the question and the answer.
 
</td>
</tr>
<tr>
<td colspan="4"><u>Division – Year 6</u></td>
</tr>
<tr>
<td colspan="4">Key mathematical vocabulary</td>
</tr>
</table>

Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times … ten times, repeated addition, division, dividing, divide, divided by, divided into, left, left over, remainder, grouping, sharing, share, share equally. one each, two each, three each … ten each, group in, pairs, threes … tens equal groups of, doubling, halving, array, row, column, number patterns, multiplication table, multiplication fact, division fact, inverse, square, squared cube, cubed			
Objectives	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division (As in year 5)	96 ÷ 3  Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.  We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.	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.  

Divide at least 3 digit numbers by 2 digit. Short Division - Factorisation (As in year 5)	As above	As above	As above. Children list factors. 1456 divided by 16. Factor pairs of 16: 1 and 16 2 and 8 4 and 4 Children choose a pair to use and follow the short division method (shown above) 1456 divided by 2 = 728 728 divided by 8 = 91 The children can choose which way around they divide by. **1456 divided by 16 = 91**
Divide at least 3 digit numbers by 2 digit. Short Division – List multiples (As in year 5)	As above	As above	As above. Children work out and list the multiples 1456 divided by 16. Multiples of 16: 1 x 16 = 16 2 x 16 = 32 3 x 16 = 48 4 x 16 = 64 5 x 16 = 80 6 x 16 = 96 7 x 16 = 112 8 x 16 = 128 Children use the multiples to complete the calculation using short division (shown above) **1456 divided by 16 = 91**

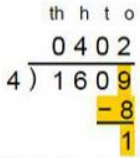
Long division	Step 1 – a remainder in the ones





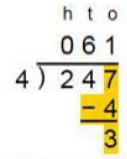
When dividing the ones, 4 goes into 7 one time. Multiply 1 × 4 = 4, write that four under the 7, and subract. This finds us the remainder of 3.

Check: 4 × 61 + 3 = 247



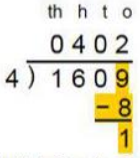
When dividing the ones, 4 goes into 9 two times. Multiply 2 × 4 = 8, write that eight under the 9, and subract. This finds us the remainder of 1.

Check: 4 × 402 + 1 = 1,609



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



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

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.

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)278 Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.	h t o 1 2)278 -2 0 Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.	h t o 18 2)278 -2↓ 07 Next, drop down the 7 of the tens next to the zero.
Divide.	**Multiply & subtract.**	**Drop down the next digit.**
h t o 13 2)278 -2 07 Divide 2 into 7. Place 3 into the quotient.	h t o 13 2)278 -2 07 -6 1 Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.	h t o 13 2)278 -2 07 -6 18 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 139 2)278 -2 07 -6 18 Divide 2 into 18. Place 9 into the quotient.	h t o 139 2)278 -2 07 -6 18 -18 0 Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.	h t o 139 2)278 -2 07 -6 18 -18 0 There are no more digits to drop down. The quotient is 139.