ABBEY MEAD
PRIMARY ACADEMY

Calculation policy

This policy is a working document and will be revised and amended as necessary.

Some images have been copied from the NCETM PD materials.

Version:	V5
Last reviewed	06-01-2025
Approved by:	Emma Tuffey
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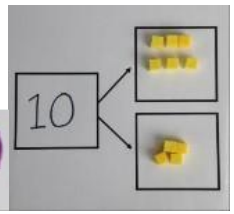
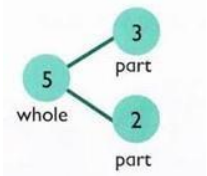
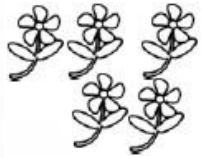
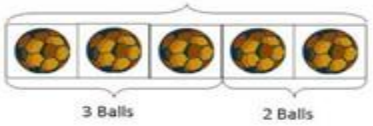
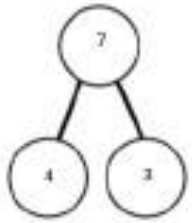
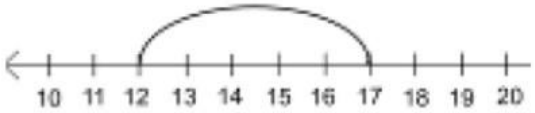
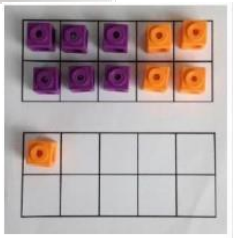
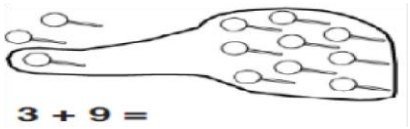
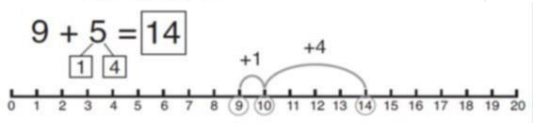
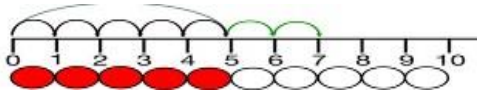
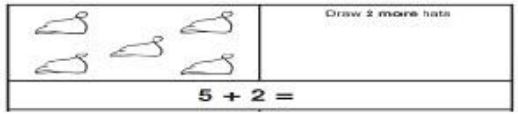
Key language: sum, total, parts and wholes, plus, add, altogether, more, ‘is equal to’ ‘is the same as’.

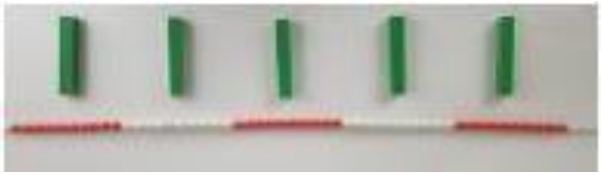
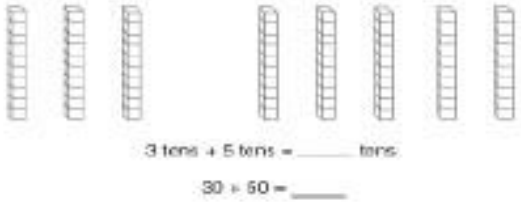
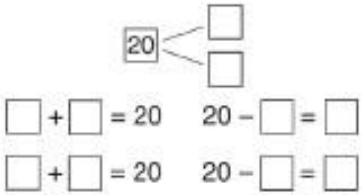
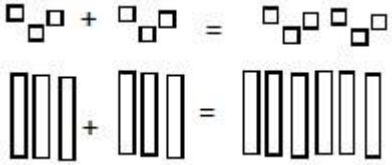
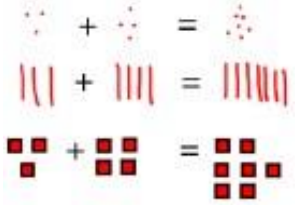
Objective & Strategy	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	  Use part whole model. Use cubes to add two numbers together as a group or in a bar.  	    Use pictures to add two numbers together as a group or in a bar.	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven. 

Addition

Year 1

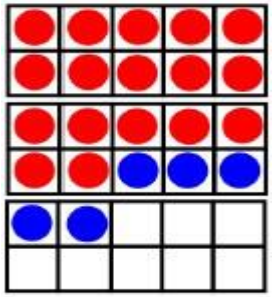
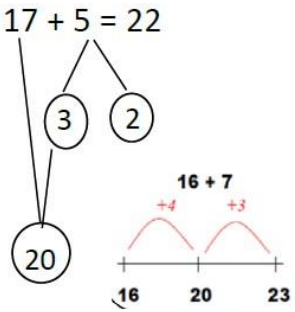
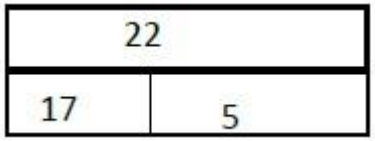
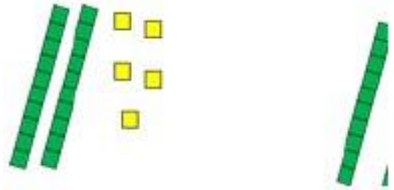
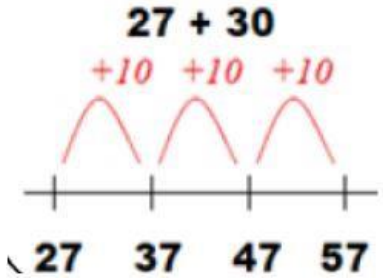
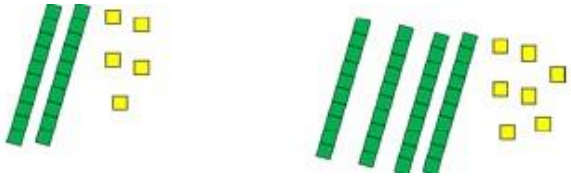
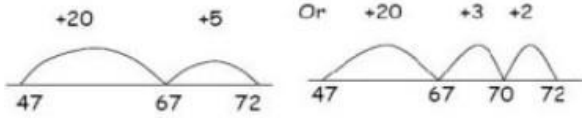
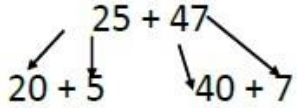
Starting at the bigger number and counting on	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer. 	12 + 5 = 17 On the number line, start at the larger number and count on in 1's or in 1 jump to find the answer. 	5 + 12 = 17 Place the larger 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 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.'*

Addition

Objective & Strategy	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 20 + ☐ = 60
Using known number facts Part-part whole	Children explore way 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 30 + 40 = 700
Bar model	3 + 4 = 7 	7 + 3 = 10 10 7 | 3	23 + 25 = 48

Year 2

Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Adding multiples of ten	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 
Using known number facts Part-part whole	25 + 10 = 35 Explore that the 1s digit does not change 		27 + 10 = 37 27 + 20 = 47 27 + ☐ = 57
Using known facts	Model using place value counters and numicon 	Use number line and bridge ten using part whole if necessary 	 20 + 40 = 60 5 + 7 = 12 60 + 12 = 72

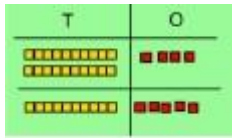
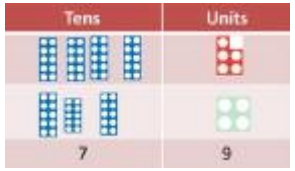
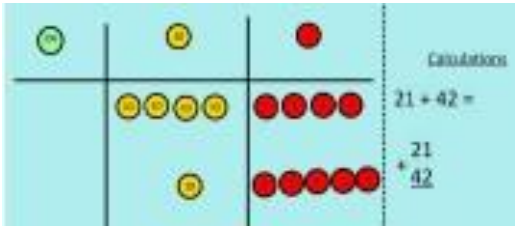
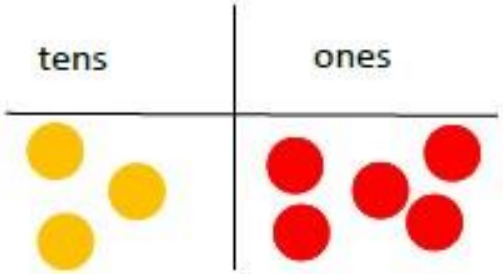
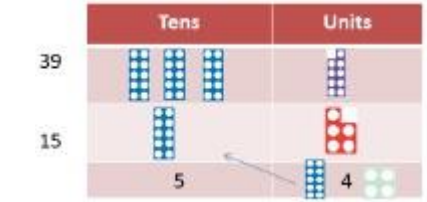
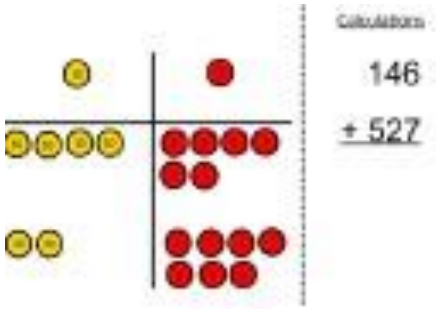
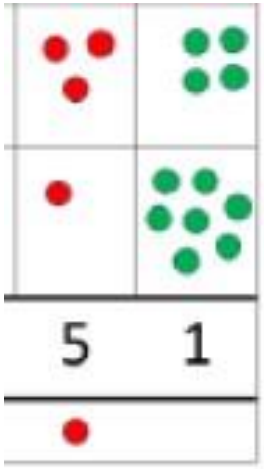
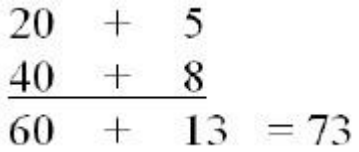
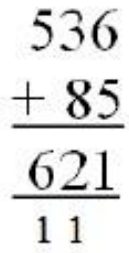
Year 2

Addition

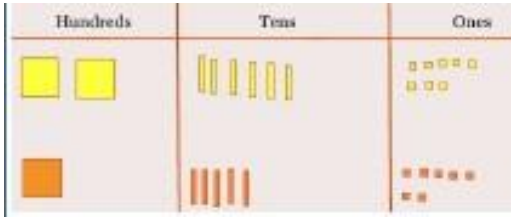
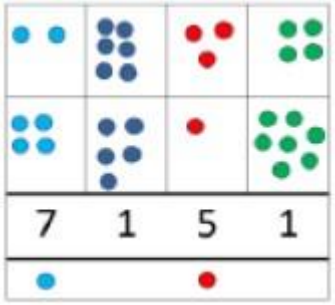
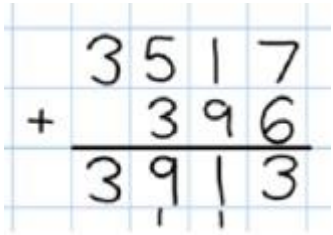
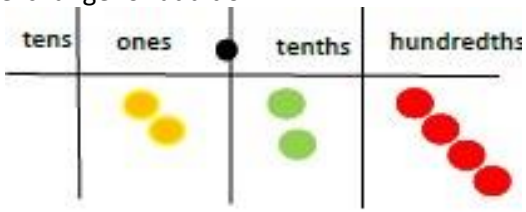
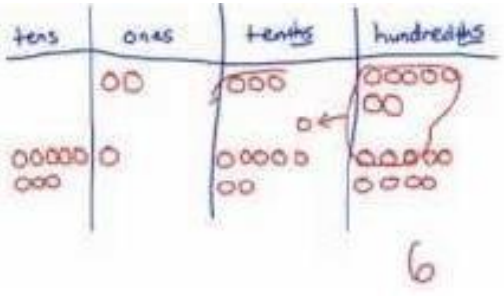
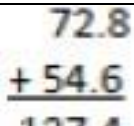
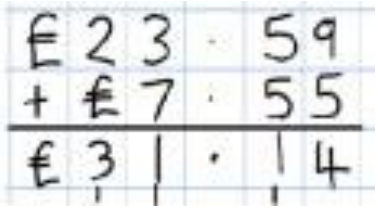
Year 3

Objective & Strategy	Concrete	Pictorial	Abstract

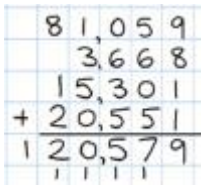
Addition

Column Addition- no regrouping Add two or three 2 or 3 digit numbers	Model using numicon  Add together the ones first, then the tens  Move to using place value counters  	Children should move to drawing the counters using a tens and one frame  	Add the ones first, then the tens and then the hundreds 
Column addition with regrouping	Exchange ten ones for a ten. Model using numicon and place value counters   	Children can draw a representation of the grid to further support and aid their learning (carrying the ten **underneath** the line)  	Start by partitioning the numbers before the formal column method, to show the exchange  

Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Year 4 Add numbers up to 4 digits	Children continue to use place value counters or dienes to add, exchanging ten ones for a ten, ten tens for a hundred and ten hundreds for a thousand 	Draw  representations using place value grid	Continue from previous learning to carry hundreds as well as tens. Make links to money and measures 
Year 5 Add numbers with more than 4 digits Add decimals with more than 2d.p including money	(As year 4) Introduce decimals place counters and model exchange for addition 	Representations e.g. 2.37 + 81.79 	 

Addition

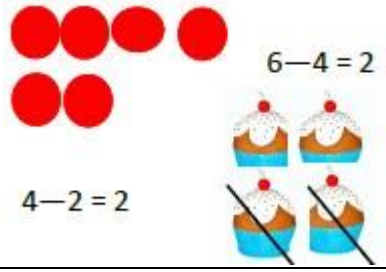
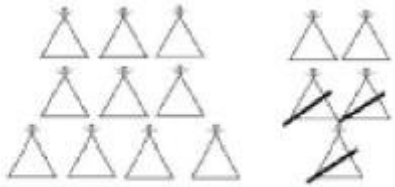
Year 6 Add several numbers of increasing complexity (Including adding money, measure and decimals with varying decimal points)	As year 5	As year 5	 Insert zeros for place holders 

Year 4 Year 5 Year 6

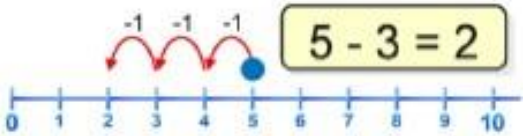
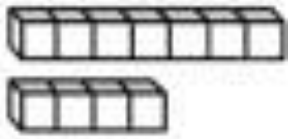
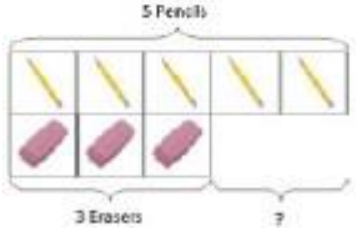
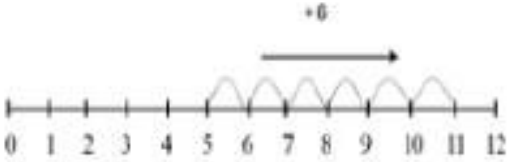
Subtraction

Key language: take away, less than, the difference, subtract, minus, fewer, decrease

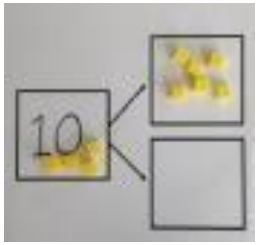
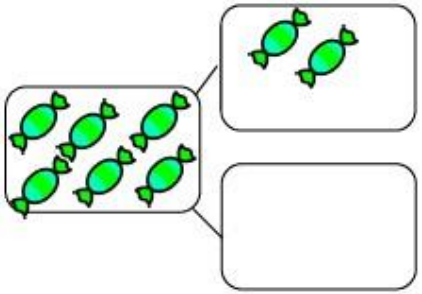
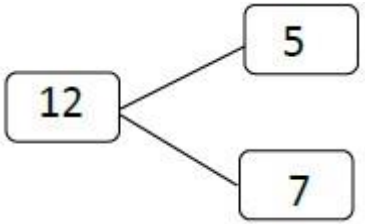
Year 1

Objective & Strategy	Concrete	Pictorial	Abstract
Taking away ones	Using 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

Subtraction

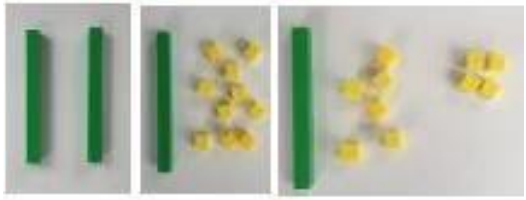
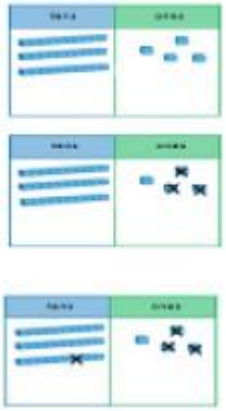
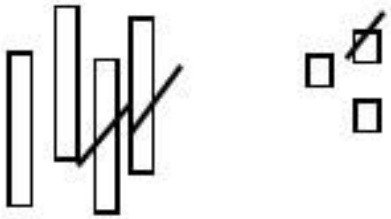
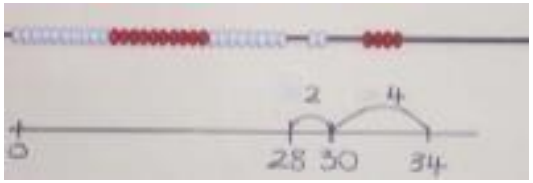
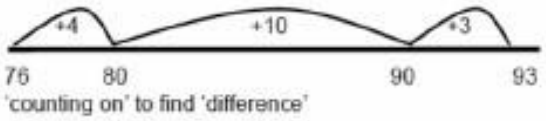
Counting back	Move objects away from the group, counting backwards   Move the beads along the bead string as you count backwards 	Count back in ones using a number line 	Put 13 in your head, count back 4. What number are you at?
Finding the difference	Compare objects and amounts “Seven is 3 more than four” “I am 2 years older than my sister”  Lay objects to represent the bar model 	Count on using a number line to find the difference 	Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister?
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**

Subtraction

Represent and use number bonds and related subtraction facts within 20 **Part-Part Whole model**	Make links to addition. Using the Part-Part Whole model to model the inverse  If 10 if the whole and 6 is one of the parts, what is the other part? 10 – 6 = 4	Using 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  	How many do we take off first to get to 10? How many left to take off? **16 – 8**

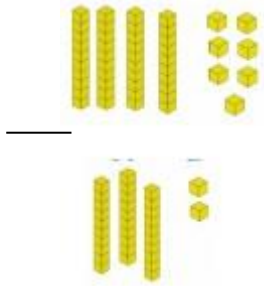
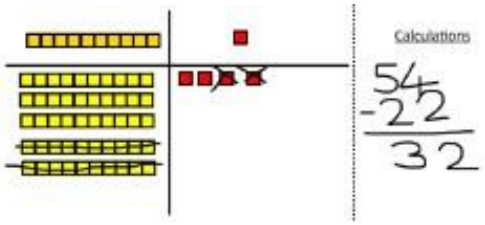
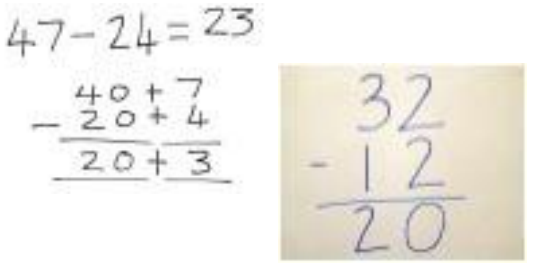
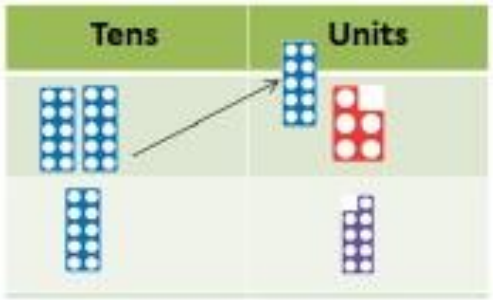
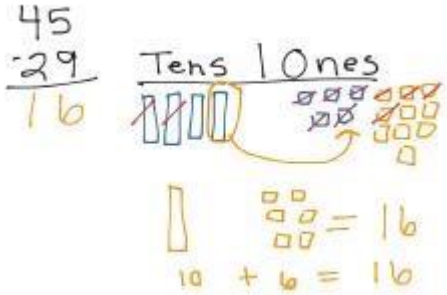
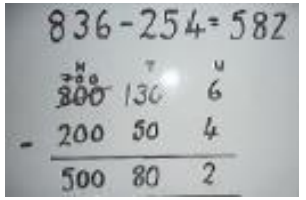
Year 1

Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Regroup a ten into ones	Use a place value chart to show how to change a ten into ten ones, use the term 'take and make' 	**20 – 4 =** 	**20 – 4 = 16**
Partitioning to subtract without re-grouping *'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 	Use a number line to count on to next ten and then  'counting on' to find 'difference' the rest	**93 – 76 = 17**

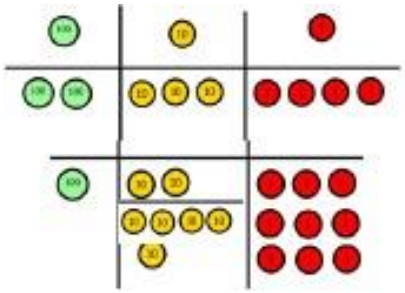
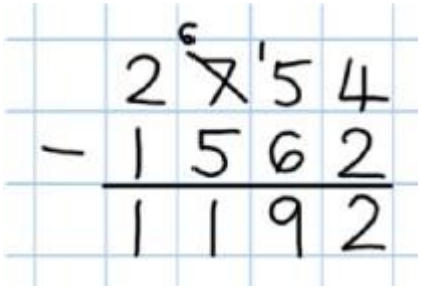
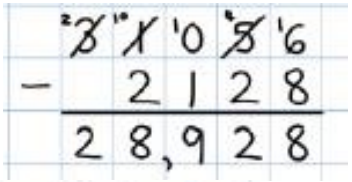
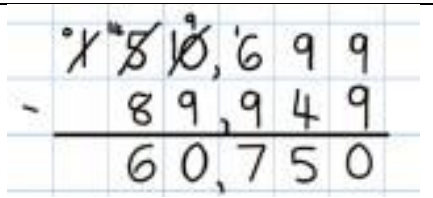
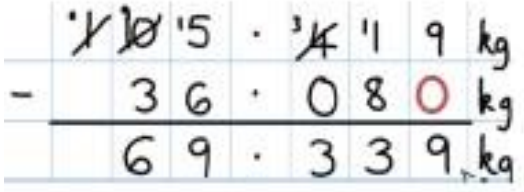
Year 2

Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping	47 – 32 Use base ten or numicon to model 	Draw representations to support understanding 	Intermediate step may be needed to lead to  clear subtraction understanding
Column subtraction with regrouping	Start with base ten or numicon. Move to place value counters, modelling the exchange of a ten into ten ones. Use the phrase ‘take and make’ for exchange 	Children may draw base 10 or place value counters, crossing off accordingly 	Begin by partitioning into place value columns   Then move to formal method

Year 3

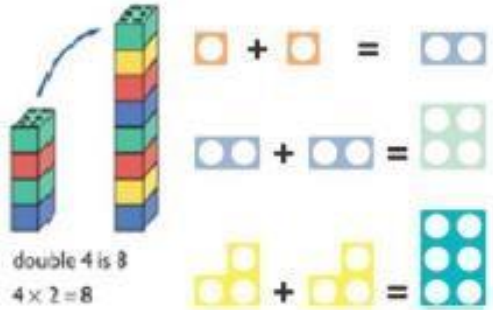
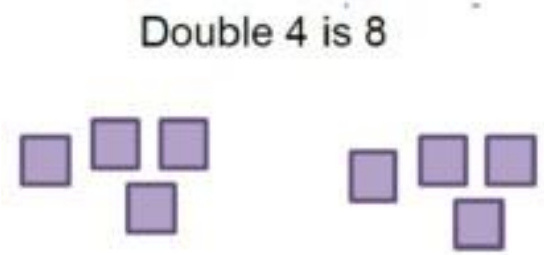
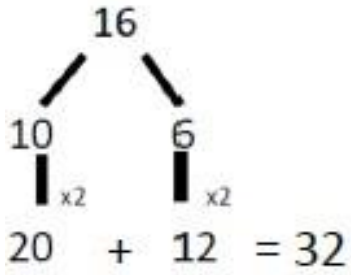
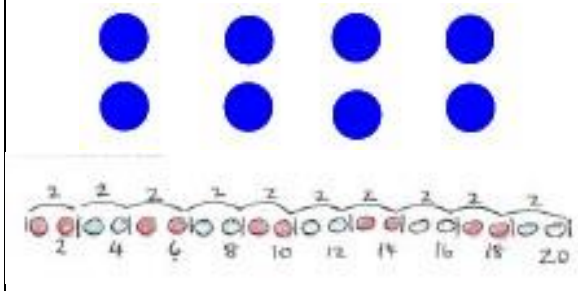
Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones Y4 subtract with up to 4 digits *Introduce decimal subtractions through context of money*	234- 179 Model process of exchange using numicon, base ten and then move on to place value counters 	Children to draw place value counters and show their exchange- See Year 3	Use the phrase 'take and make' for exchange 
Year 5 Subtract with at least 4 digits, including money and measures *Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal*	As year 4	Children to draw place value counters and show their exchange- See Year 3	Use zeros for place-holders  
Year 6 Subtract with increasingly large and more complex numbers and decimal values			 

Year 4 Year 5 Year 6

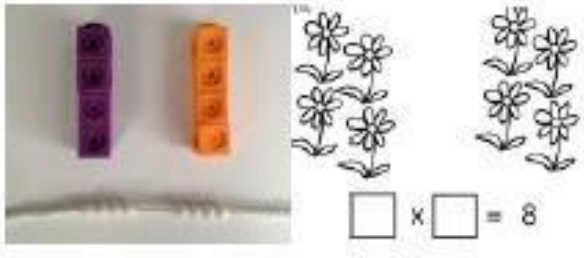
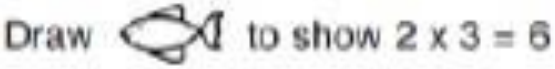
Subtraction

Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Use practical activities using manipulative 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 as 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

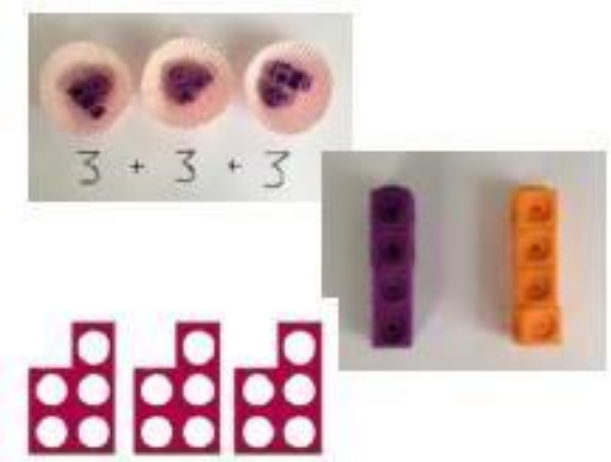
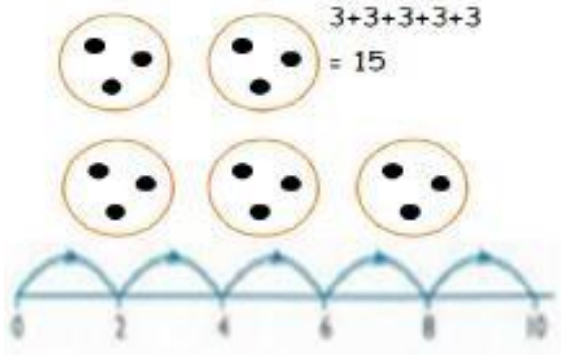
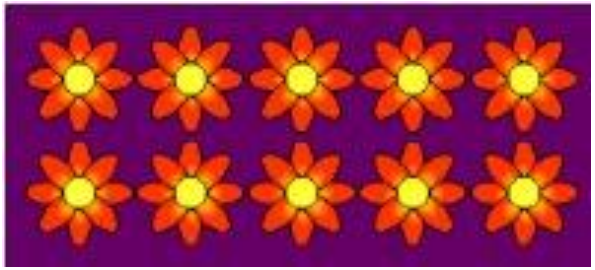
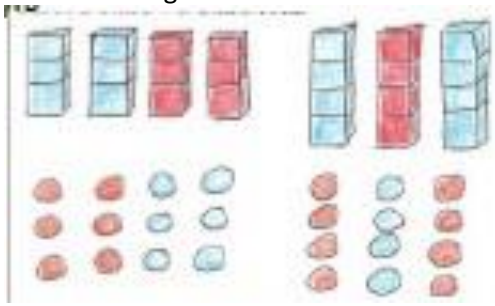
Multiplication

Key language: take away, less than, the difference, subtract, minus, fewer, decrease

Making equal groups and counting the total	Use manipulative to create equal groups 	Draw and make representations 	**2 x 4 = 8**

Year 1

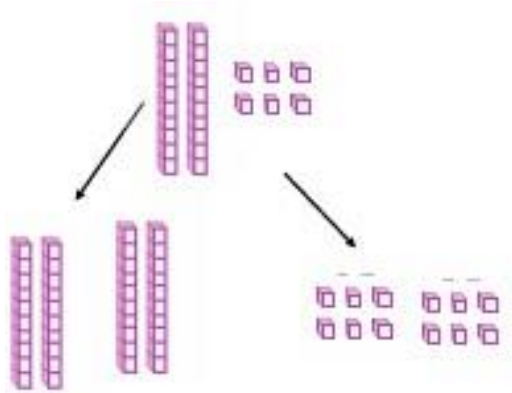
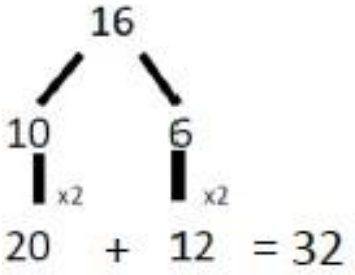
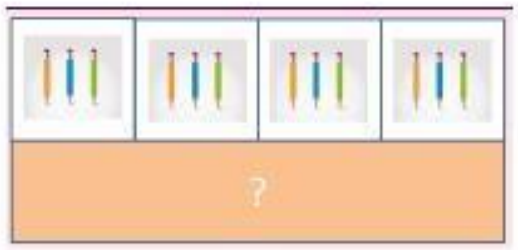
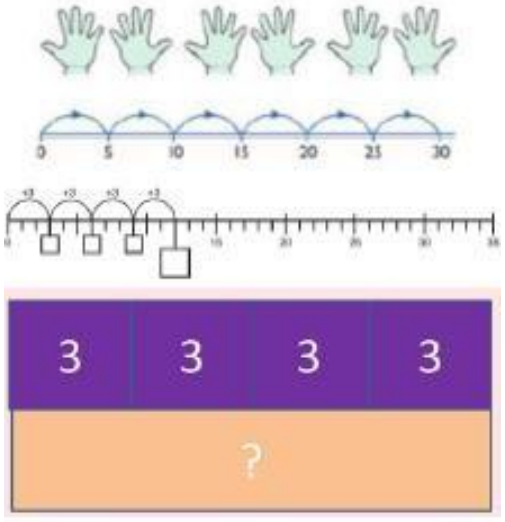
Year 1

Objective & Strategy	Concrete	Pictorial	Abstract
Repeated addition	Use different objects to add different 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 two lots of 5, three lots of 2, etc. 	Draw representations of arrays to show understanding 	**3 x 2 = 6** **2 x 5 = 10**

Objective & Strategy	Concrete	Pictorial	Abstract

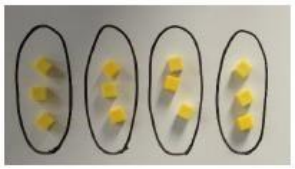
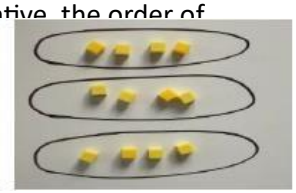
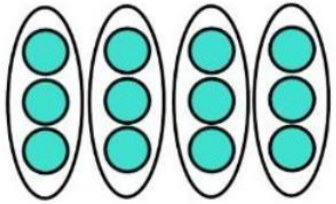
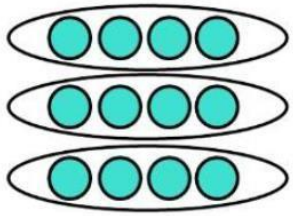
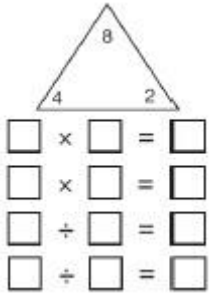
Multiplication

Year 2

Doubling	Model doubling using dienes and place value 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
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. 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 $4 \times 3 = \square$

Multiplication

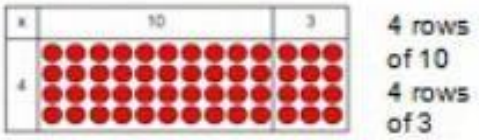
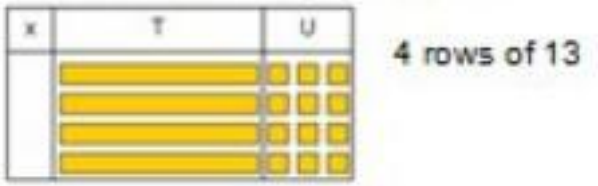
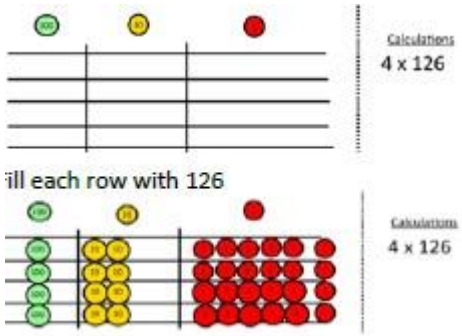
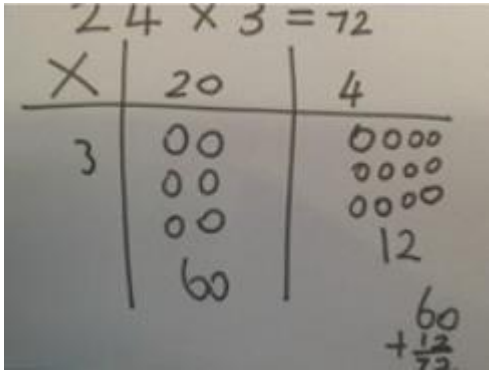
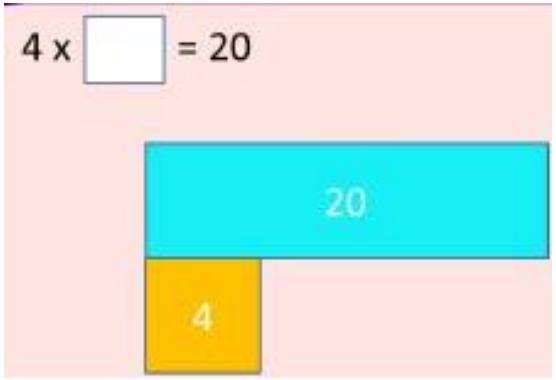
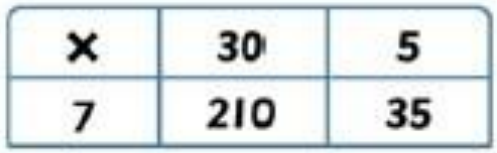
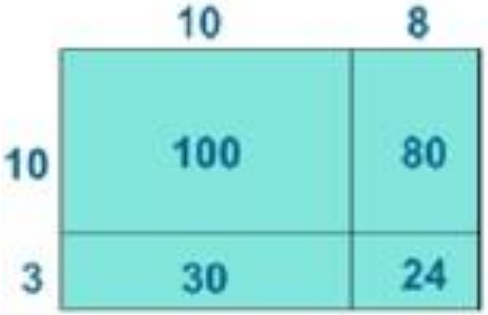
Year 2

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplication is commutative	Create arrays using counters, cubes and numicon    Pupils should understand than an array can represent different equations and that, as multiplication is commutative, the order of n  	**Use representations of arrays to show different calculations and explore commutativity.**  	**12 = 3 x 4** **12 = 4 x 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.

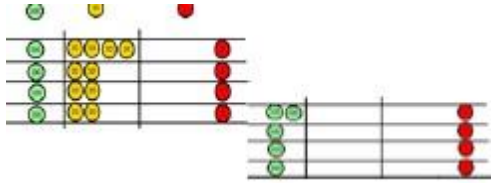
Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract

Multiplication

Grid method	Show the links with arrays to first introduce the gird method  Move onto base ten to move towards a more compact method  Next, move onto place value counters to show how we are finding groups of a number. We are  multiplying by 4, so we need 4 rows	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 illustrated below  **Bar models are used to explore missing numbers**  	**Start with multiplying by one digit numbers and showing the clear addition alongside the grid**  **210 + 35 = 245** **Moving forward, multiply by a 2 digit number showing the different rows within the grid method** 

Multiplication

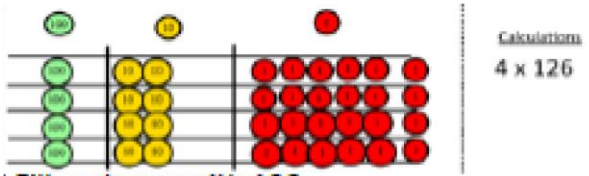
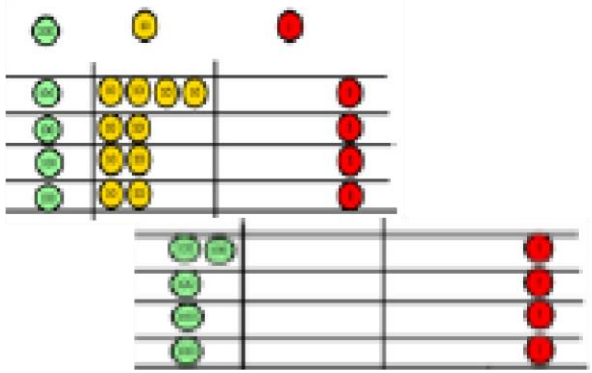
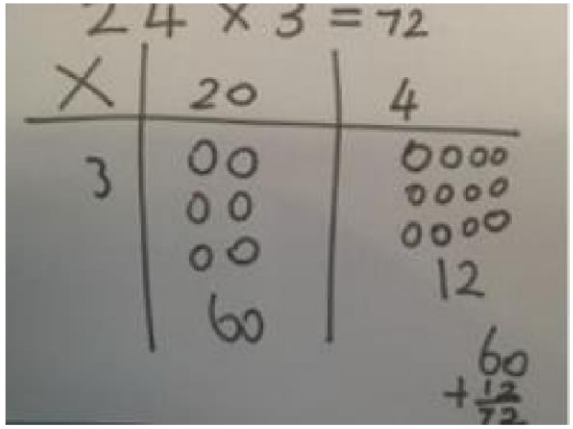
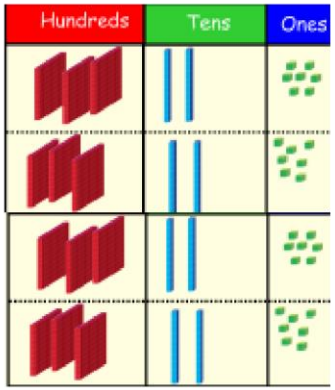
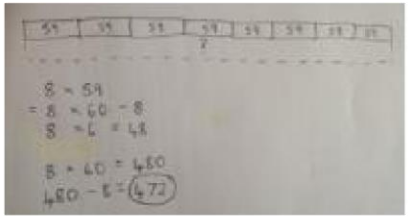
	Add up each column, starting with the ones making any exchanges needed  Then you have your answer		

Year 3

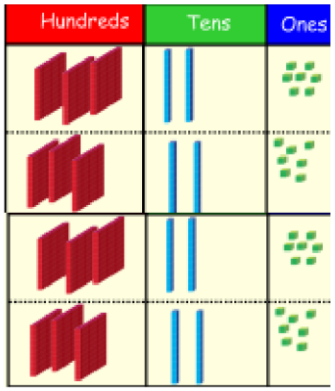
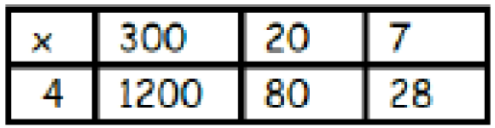
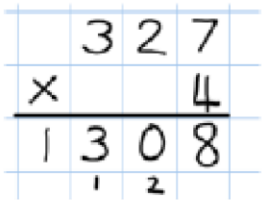
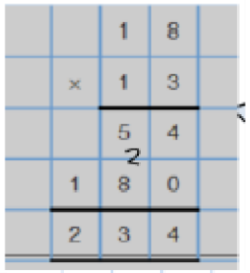
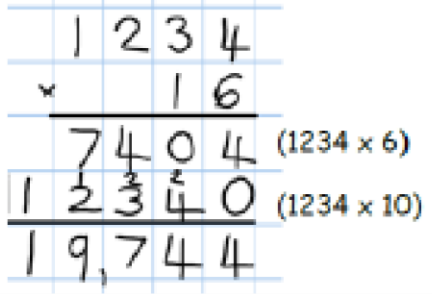
Multiplication

Multiplication

Year 4

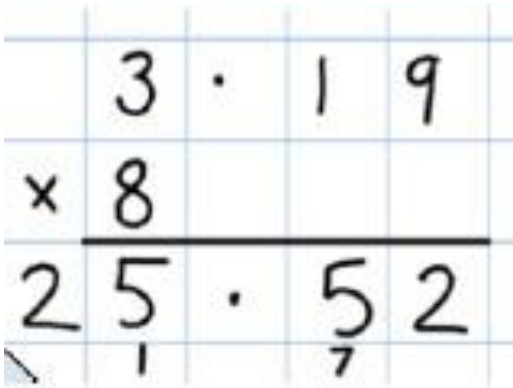
Objective & Strategy	Concrete	Pictorial	Abstract
Grid method recap from year 3 for 2 digit x 1 digit **Move on to multiplying 3 digit by 1 digit (Y4 expectation)**	Use place value counters to show how we are finding groups of a number. We are multiplying by 4, so we need 4 rows  Fill each row with 126  Add up each column, starting with the ones making any exchanges needed	Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts of just use the circles in the different columns to show their thinking as illustrated below  	**Start with multiplying by 1 digit numbers and showing the clear addition alongside the grid** | × | 30 | 5 | | 7 | 210 | 35 | 210 + 35 = 245 327 x 4 28 80 1200 1308 This may lead to a compact method.
Column multiplication	Children can continue to be supported by place value counters at this stage of multiplication. This is initially done when 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  	The grid method may be used to show how this relates to a formal written method. | x | 300 | 20 | 7 | | 4 | 1200 | 80 | 28 | Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods 	

Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Column multiplication for 3 and 4 digits x 1 digit	It is important at this stage that they always multiply the ones first.  Children can continue to be supported by place value counters at this stage of multiplication. This is initially done when there is no regrouping. 321 x 2 = 642	 	327 x 4 28 80 1200 1308  This may lead to a compact method.
Column multiplication	Manipulatives may still be used with the corresponding long multiplication modelled alongside	Continue to use bar modelling to support problem solving  	 18 x 3 on the first row (8 x 3 =24, carrying the 2 for 20, then 1 x 3) 18 x 10 on the 2nd row. Show multiplying by 10 by putting zero in units first 

Year 5 & 6

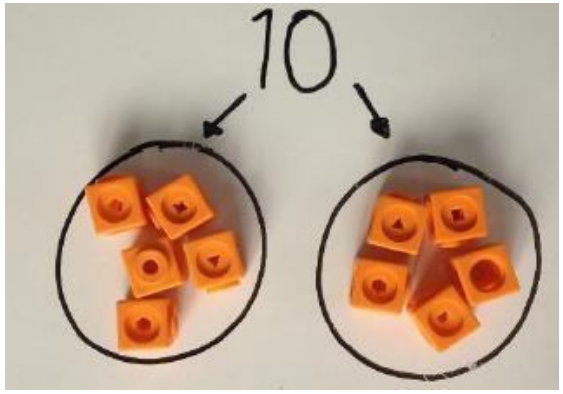
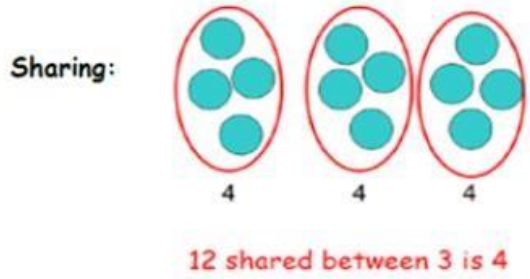
Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplying decimals up to 2 decimal places by a single digit			Remind children that the single digit belongs in the units column. Line up the decimal points in the question and the answer. 

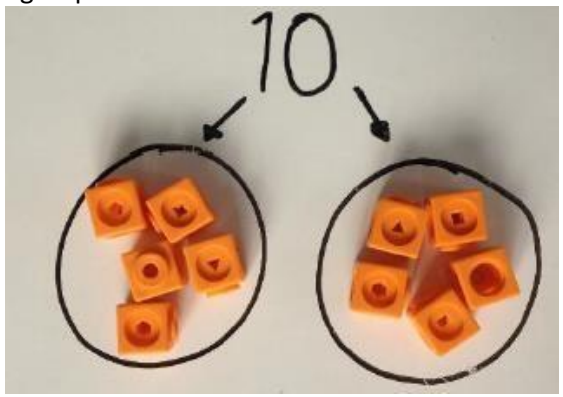
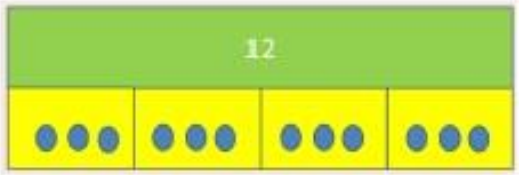
Year 6

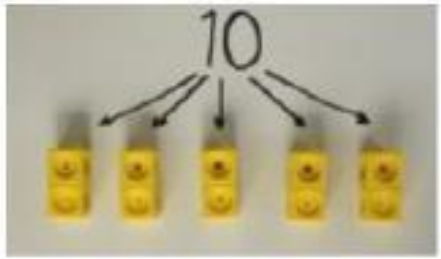
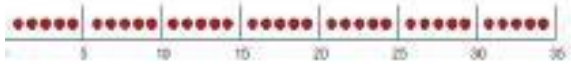
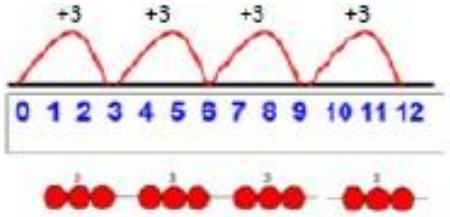
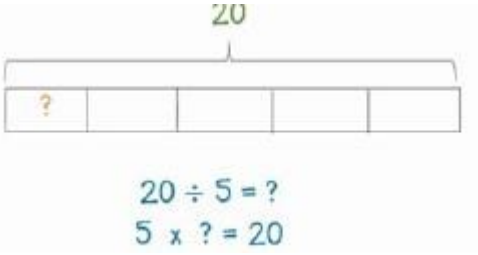
Key language: share, group, divide, divided by, halved

Division

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	  I have 10 cubes, can you share them equally into 2 groups? 	Children use pictures or shapes to share quantities 8 shared between 2 is 4  	**12 shared between 3 is 4**

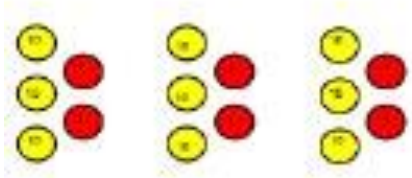
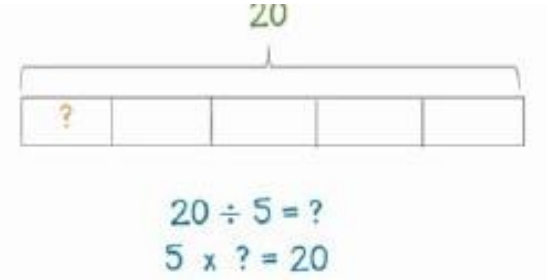
Year 1

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	I have 10 cubes, can you share them equally into 2 groups?  	Children use pictures of shapes to share quantities  8 ÷ 2 = 4 Children use bar modelling to show and support understanding  12 ÷ 4 = 3	12 ÷ 3 = 4

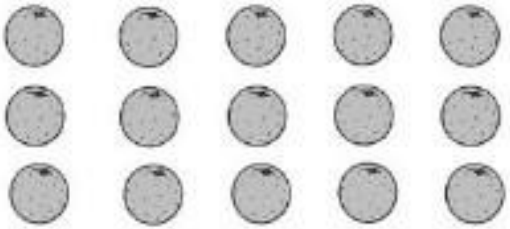
Division as grouping	Divide quantities into equal groups Use cubes, counter, objects or place value counters to aid understanding  	Use number lines for grouping  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be  within each group.	28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

Year 2

Division

Objective & Strategy	Concrete	Pictorial	Abstract
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding.  24 divided into groups of 6 = 4 96 ÷ 3 = 32 	Continue to use bar modelling to aid solving division problems. 	How many groups of 6 in 24? 24 ÷ 6 = 4

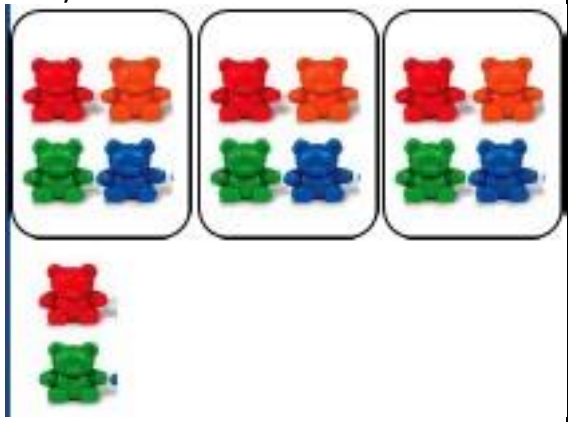
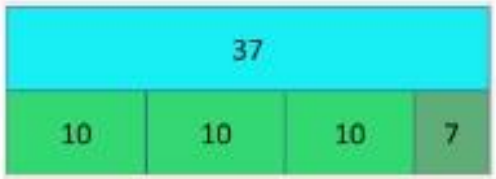
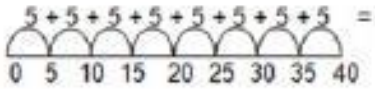
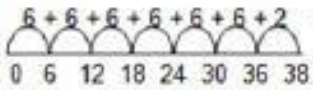
Year 3

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

Year 3

Division

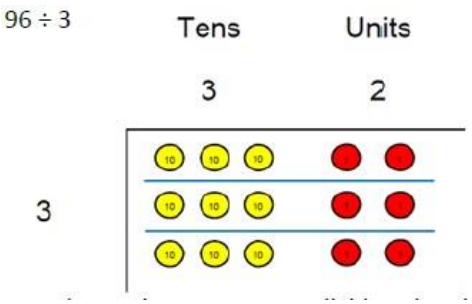
Objective & Strategy	Concrete	Pictorial	Abstract

Division with remainders	14 ÷ 3 = Divide objects between groups and see how many are left over 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder  Draw dots and group them to divide an amount and clearly show a remainder.  Use bar models to show division with remainders.  ut remainder: y 5s in 40?" remainder:   bers, when it becomes inefficient to count in single multiples, bigger ecorded using known facts.	**Complete written divisions and show the remainder using r.** 

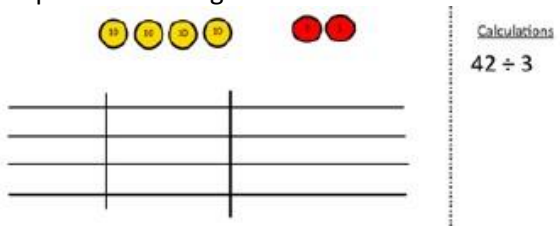
Objective & Strategy	Concrete	Pictorial	Abstract

Short Division

Divide at least 3 digit numbers by 1 digit

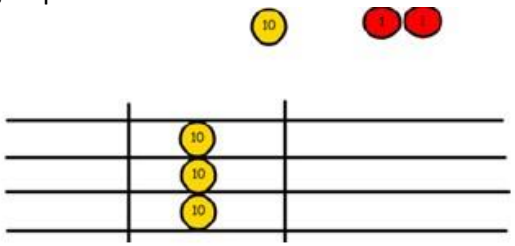


Use place value counters to divide using the bus stop method alongside

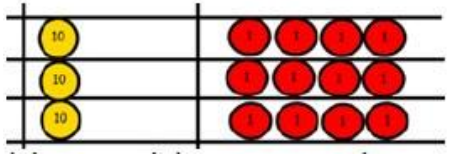


42 ÷ 3=

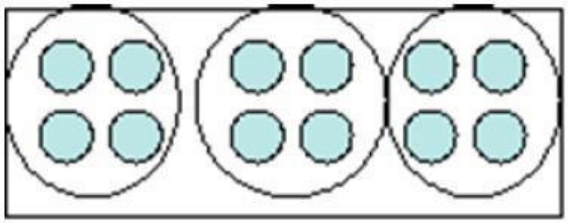
Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.



We exchange this ten for ten ones and then share the ones equally among the groups.

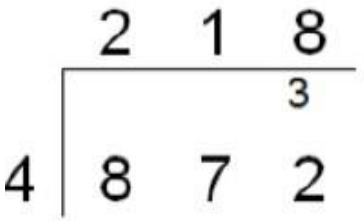


Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.

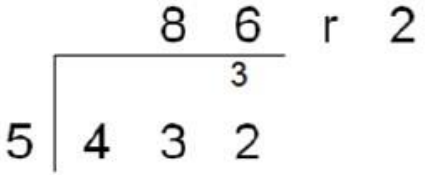


Encourage them to move towards counting in multiples to divide more efficiently.

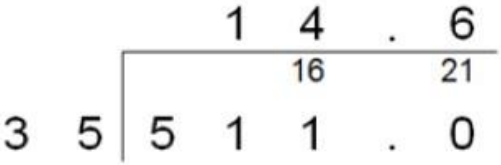
Begin with divisions that divide equally with no remainder.

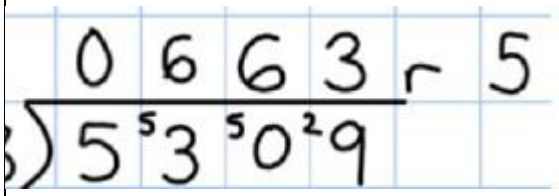


Move onto divisions with a remainder.



Finally move into decimal places to divide the total accurately.



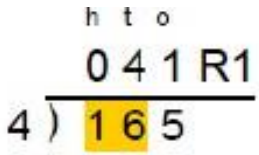


	We look at how much is in one group, which is 14		

Year 4, 5 and 6

Long division- Year 6

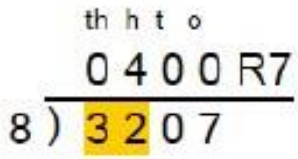
Step 1- a remainder in the ones



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

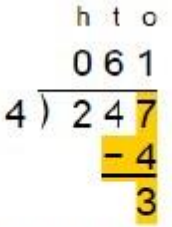
4 goes into 16 four times.

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



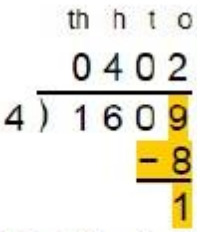
8 does not go into 3 of the thousands. So combine the 3 thousands with the 2 hundreds (3,200).

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



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

Long division- Year 6

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.

Long division- Year 6

Step 2 - a remainder in any of the place values

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