Wheldrake with Thorganby CE Primary School

Mathematics Calculation Policy

Working together to be the best we can be

This policy has been largely adapted from the White Rose Maths Hub Calculation Policy with further material added. It is a working document and will be revised and amended as necessary.

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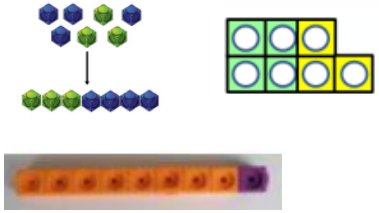
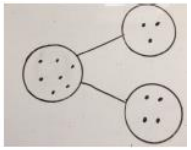
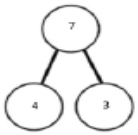
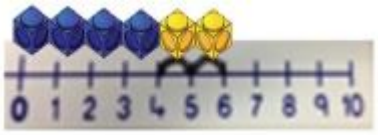
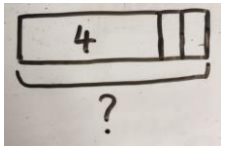
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT

ADDITION

Early Years / Year 1 **Combining two parts to make a whole:** part- whole model. Joining two groups and then recounting all objects using one-to-one correspondence _____ is a part, _____ is a part and the whole is _____	Use a range of resources - teddy bears, shells, cars 	  	Practice number formation eg 5 Mark marking to represent numbers eg ||||| or o o o o o 4 + 3 = 7 Four is a part, 3 is a part and the whole is seven. Use the part-part whole model to move to abstract  10 = 6 + 4
Starting at the bigger number and counting on The bigger number is _____. To find the total, I need to start at the biggest number, then count **on**. (delete words as chn become more familiar)	Counting on using number lines using cubes 	A bar model which encourages the children to count on, rather than count all. 	 The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? 4 + 2 5 + 12 = 17

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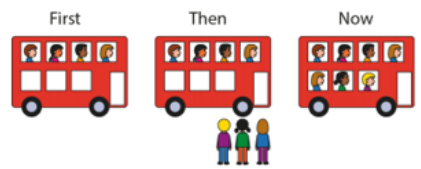
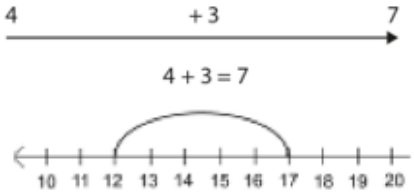
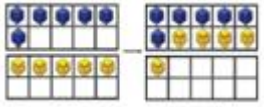
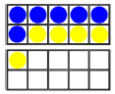
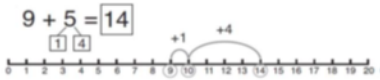
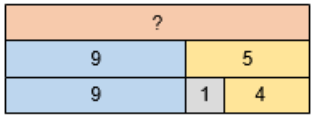
First… Then… Now… E.g. **First** there were 4 children on the bus, **then** 3 children got on, **Now** there are 7 children on the bus. (this will help with the inverse relationship and missing number)	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	  Start at the larger number on the number line and count on in ones or in one jump to find the answer. 	Place the larger number in your head and count on the smaller number to find your answer.
Making / regrouping to 10 (essential skill to support column addition later on) Children should be able to link addition to making 10 first and then adding remaining amount I need ___ to make ten. I have ___ left over. 10 + ___ is ___.	6 + 5 = 11 Start with the bigger number and use the smaller number to make 10.  	Children to draw the ten frame and counters/cubes.   	7 + 4 = 7 + ___ = 10 10 + ___ = ___ If I am at seven, how many more do I need to make 10. How many more do I need to add onto 10?

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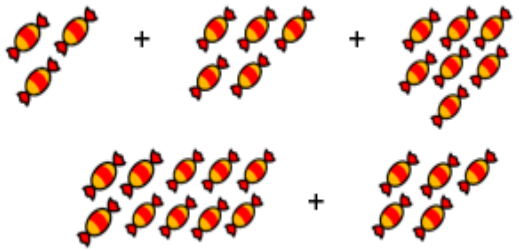
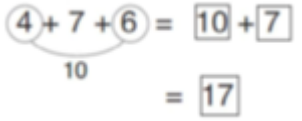
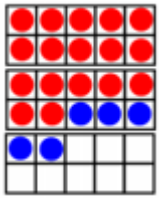
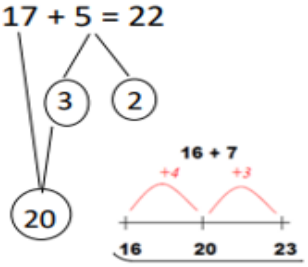
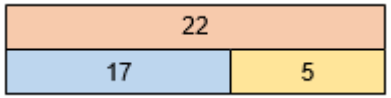
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Adding three single digits Here the emphasis should be on the language rather than the strategy. ___ and ___ make ten Ten and ___ is ___	4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  As pupils are using the bead string, ensure that they are explaining using language such as; '1 more than 5 is equal to 6.' '2 more than 5 is 7.' '8 is 3 more than 5.'	 Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	Combine the two numbers that make 10 and then add on the remainder.  Look for ways to make 10 and use this knowledge to solve, e.g. 9 + 3 + 4 = 10 + 2 + 4 = 16
Year 2 **Add a two digit number and ones** _____ can be partitioned into _____ and _____. _____ and _____ make (a multiple of ten). (Multiple of ten and _____ (remainder) makes _____. e.g. 17 + 5 5 can be partitioned into 3 and 2. 17 and 3 make 20. 20 and 2 make 22.	Use ten frame to make ten to start  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 

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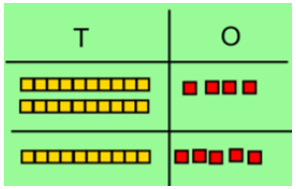
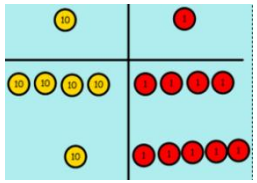
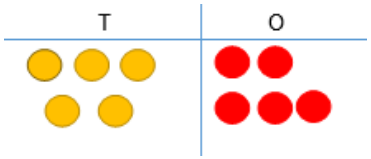
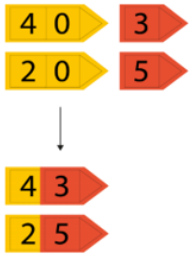
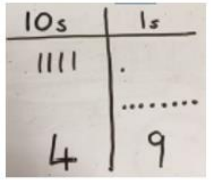
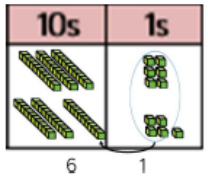
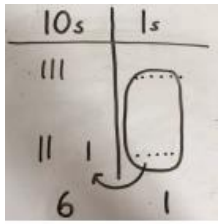
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Column method - with grouping The___ is in the ones column, it represents ___ one(s). The ___ is in the tens column, it represents _____ ten(s) Y2 to begin to use exchanging when ready	24 + 15= Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters  	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions    	41 + 8 = 1 + 8 = 9 40 + 9 = 49 4 1 + 8 4 9 double line is really important – equals sign
Year 3 **Column method - with regrouping with up to 3 digits and carrying** Year 2 only to two 2 digit numbers Year 3 onwards will work with larger numbers If the column sum is equal to ten or more, we must exchange We need to exchange ten ones for a ten	Make both numbers on a place value grid  	Children to represent the base 10 in a place value chart.  	Start by partitioning the numbers before moving on to clearly show the exchange below the addition. 20 + 5 40 + 8 60 + 13 = 73

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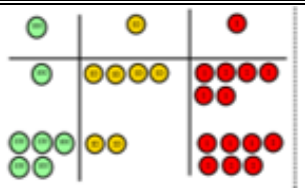
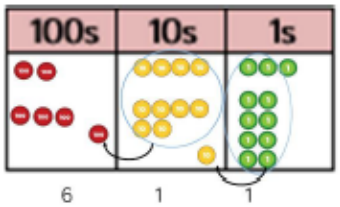
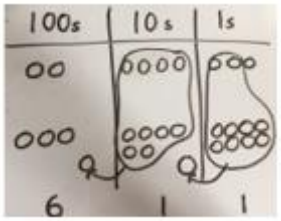
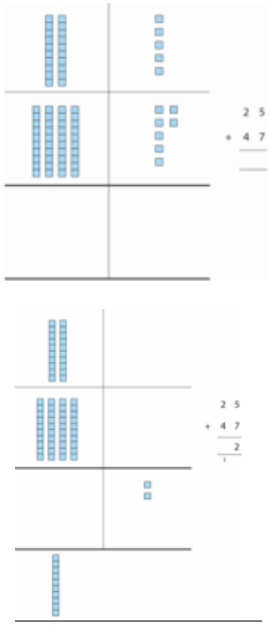
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
	 Add up the units and exchange 10 ones for one 10.  Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added. This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100. 	 2 4 3 + 3 6 8 _____	 Ensure that the abstract column method is shown alongside the base 10 to explictly link where the exchanging is and why. 536 + 85 621 1 1

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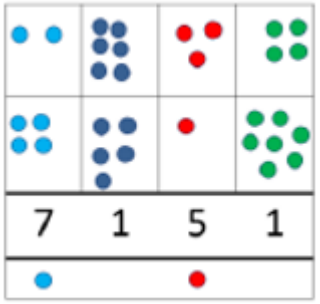
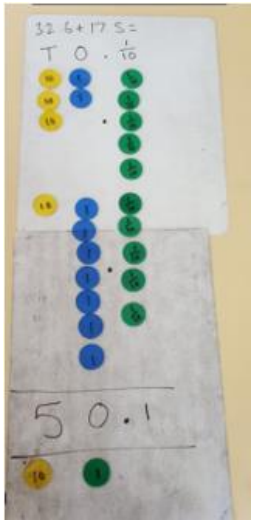
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Year 4 **Column method- regrouping with up to 4 digits and carrying**	As year 3 but with up to 4-digit numbers and with carrying		<table><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td>2</td><td>6</td><td>3</td><td>4</td></tr><tr><td>+4</td><td>5</td><td>1</td><td>7</td></tr><tr><td>7</td><td>1</td><td>5</td><td>1</td></tr><tr><td>1</td><td></td><td>1</td><td></td></tr></table>
Year 5 and 6 **Column method with regrouping.** Dealing with larger numbers and decimals numbers. Children should also be able to solve inverse problems related to the column method.	As children move on to decimals. Money and decimal place value counters can be used to support 	Use pictorial examples as year 4 if needed based on decimal values	As the children move on, introduce decimals with the same number of decimal places. Money can also be used here. 72.8 + 54.6 127.4 1 1 £23.59 + £ 7.55 £31.14 1 1 1 23.361 9.080 59.080 + 1.300 93.511 2 1 2

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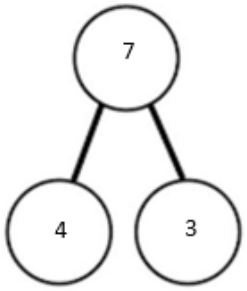
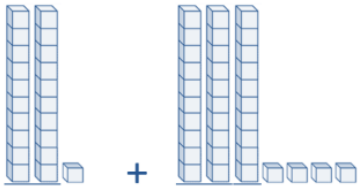
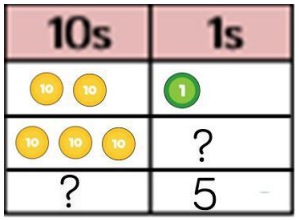
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Conceptual variation; different ways to solve 21 + 34			
 ? | ? 21 | 34	Word problems: In year 3, there are 21 children and in year 4, there are 34 children. How many children in total? 21 + 34 = 55. Prove it	21 +34 ____ 21 + 34 = = 21 + 34 Calculate the sum of twenty-one and thirty-four.	 

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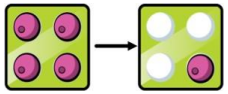
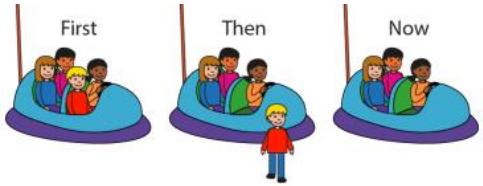
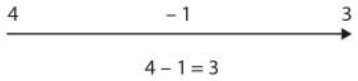
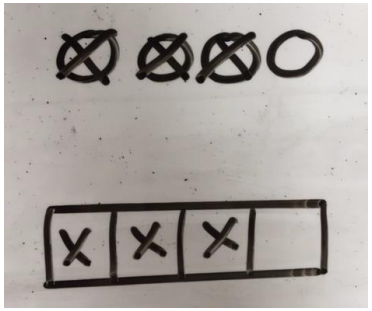
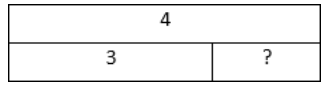
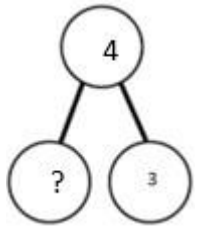
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT

SUBTRACTION

Early Years / Year 1 **Taking away ones** When this is first introduced, the concrete representation should be based upon the diagram. Real objects should be placed on top of the images as one – to – one correspondence so that pupils can take them away, progressing to representing the group of ten with a tens rod and ones with ones cubes First… Then… Now… e.g. **First** there were 4 children in the car, **then** 1 child got out, **Now** there are 3 children in the car.	Use physical objects, counters, cubes etc to show how objects can be taken away.  **6 – 2 = 4**  **4 – 2 = 2**  4 – 3 = 1 (double sided counters) 	   Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.	**4- 3 =** ☐ ☐ **= 4 – 3**  
Year 1 **Counting back** Subtracting 1, 2, or 3 by counting back.	**Counting back** (using number lines or number tracks) children start with 6 and count back 2. 6 – 2 = 4	Children to represent what they see pictorially e.g.	Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line

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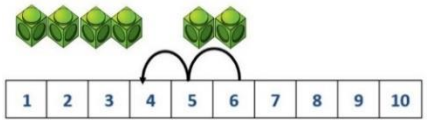
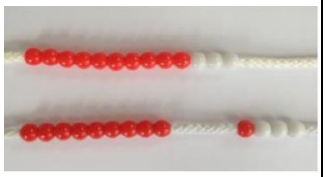
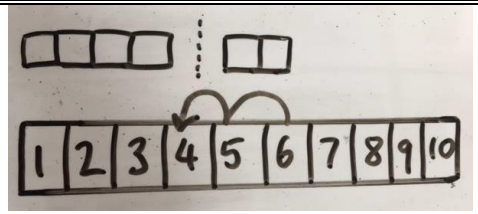
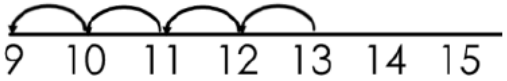
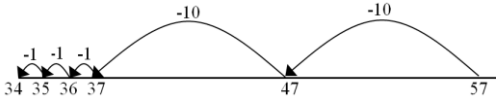
Pupils should be encouraged to rely on number bonds knowledge as time goes on, rather than using counting back as their main strategy Start on _____ and count back _____.	 6 – 2 = 4 Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones. 13 – 4  Use counters and move them away from the group as you take them away counting backwards as you go.  double sided counters	 Represent what they see pictorially Count back on a number line or number track  Start at the bigger number and count back the smaller number showing the jumps on the number line.	Put 13 in your head, count back 4. What number are you at? Use your fingers to help.
Year 2 **Counting back** Subtracting by counting back.		 This can progress all the way to counting back using two 2 digit numbers.	To progress to: Counting back in multiples in your head, visualising the number line.

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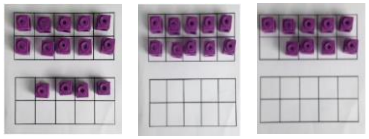
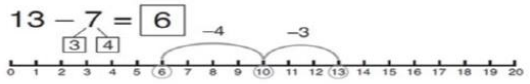
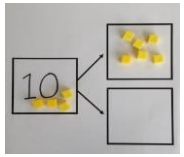
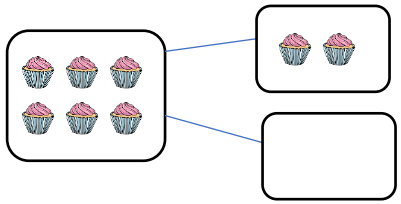
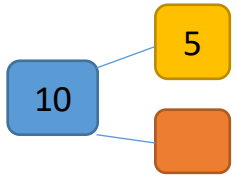
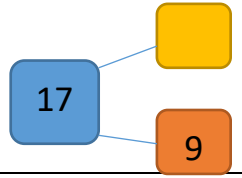
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Pupils should be encouraged to rely on number bonds knowledge as time goes on, rather than using counting back as their main strategy Start on _____ and count back _____.			
Make 10 As with addition, children see that it is more efficient to subtract to get to ten first then subtract again from ten. Knowledge of number bonds to and from ten and twenty are vital.	14 – 5 = 	 To reach the next 10 I need to takeaway 3. 7 can be partitioned into 3 and 4. 13 takeaway 3 is ten. 10 takeaway 4 is 6.	16 – 8= How many do we take off to reach the next 10? How many do we have left to take off?
Part / Whole Model _____ is the whole, _____ is a part and _____ is a part. First… Then… Now… (as above)	 Link to addition- use the part whole model to help explain the inverse between addition and subtraction. If 10 is the whole and 6 is one of the parts. What is the other part? 10 - 6 =	Use a pictorial representation of objects to show the part part whole model. 	10 – 5 =  Move to using numbers within the part whole model. 17 – 9 = 

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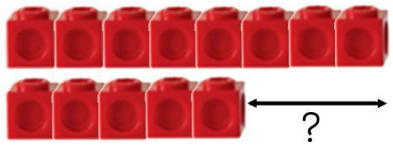
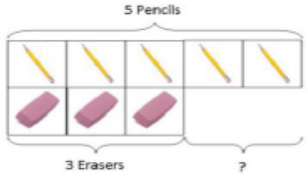
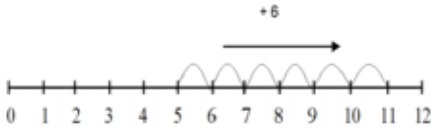
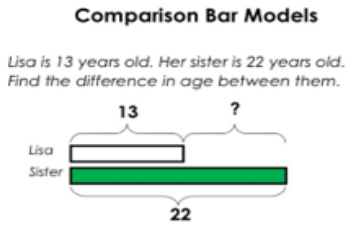
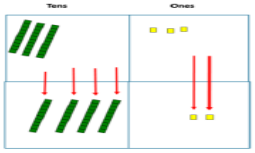
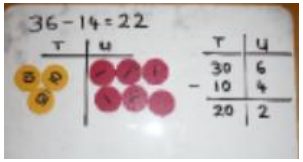
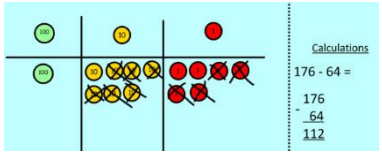
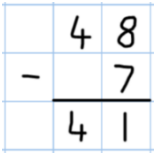
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Find the difference The difference is the amount between amounts.	  Use basic bar models with items to find the difference	Count on to find the difference.  Draw bars to find the difference between 2 numbers.  	Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches. 23 – 15 = 8 Children to explore why 8-6 = 7-5 = 6-4
Year 2 / 3 **Column method without exchanging** Subtract numbers with up to three digits, using formal written methods of columnar subtraction. The bigger number is _____ so that goes at the top. Take away the _____, then takeaway the _____.	Use Base 10 to make the bigger number then take the smaller number away  Show how you partition numbers to subtract. Make the larger number first  	Draw the Base 10 or place value counters alongside the written calculation to help to show working.   	Start with expanded method to subtract 47 – 24 = 23 This will lead to a clear written column subtraction 

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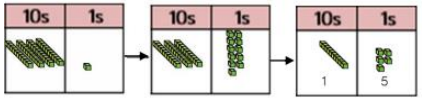
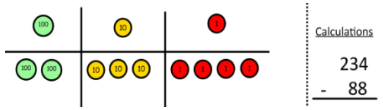
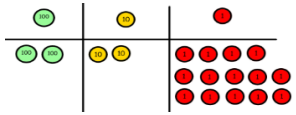
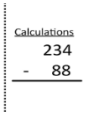
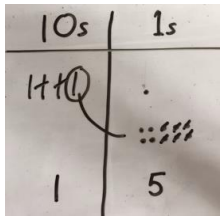
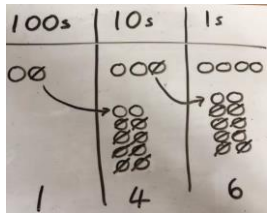
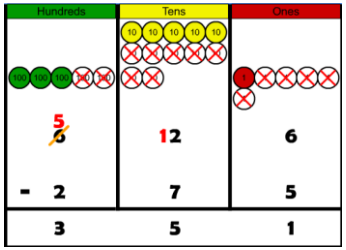
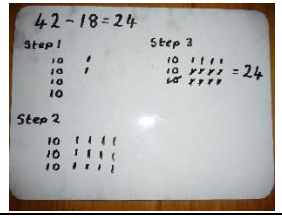
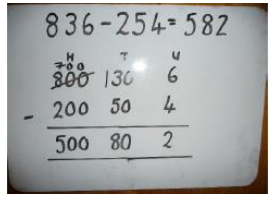
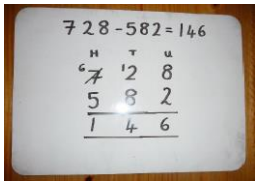
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Year 2 / 3 / 4 **Column method with regrouping** Year 3 use 3digit numbers Year 4 onwards work with larger numbers	Lots of practical work with Base 1o deines at this stage Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions that exchange twice.  Make the larger number with the place value counters.  Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.   Now I can subtract my ones. Now look at the tens, can I take away 8 tens easily?	Represent the place value counters pictorially; remembering to show what has been exchanged.   Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make  When confident, children can find their own way to record the exchange/regrouping.  Writing the numbers shows that the child understands the method and knows when to exchange/regroup.	Start formal written method by partitioning the number into clear place value columns  Moving forward the children use a more compact method.  Formal column method. Children must understand what has happened when they have crossed out digits.

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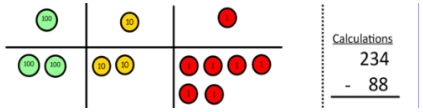
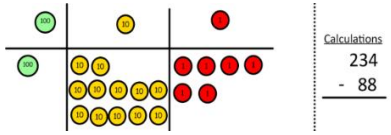
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
	 I need to exchange one hundred for ten tens.  		

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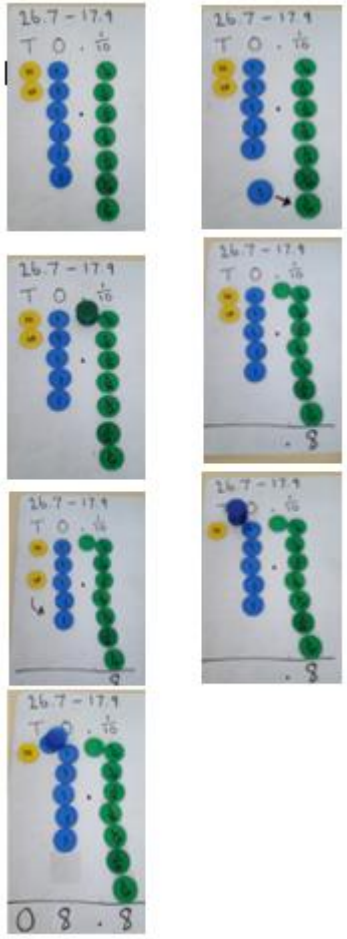
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Year 5 / 6 **Column method**		As Year 4 but include decimal numbers	Move children onto using the column method to subract increasingly larger numbers. Including those where more than one borrow is required. $\begin{array}{r} \cancel{4}^{3}\ \ {}^{1}\cancel{0}^{9}\ {}^{1}3 \\ -\ \ 2\ \ 8\ \ 4 \\ \hline 1\ \ 1\ \ 9 \end{array}$ Develp an understanding of subtracting any number including decimals. $\begin{array}{r} \ \ \ \ 5\ \ 12\ \ \ \ 1 \\ 2\ \cancel{6}\ \cancel{3}\ .\ \mathbf{0} \\ -\ \ \ 2\ 6\ .\ 5 \\ \hline 2\ 3\ 6\ .\ 5 \end{array}$

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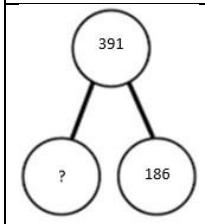
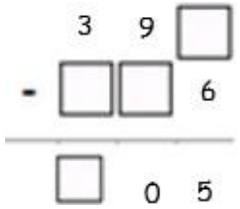
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
	Use concrete materials to represent columnal subtraction with decimal numbers.		
Conceptual variation; different ways to solve 391 - 186			
 391 186 | ?	Raj spent £391, Timmy spent £186. How much more did Raj spend? Calculate the difference between 391 and 186.	□ = 391 – 186 391 -186 ___ What is 186 less than 391?	Missing digit calculations 

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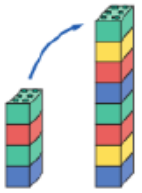
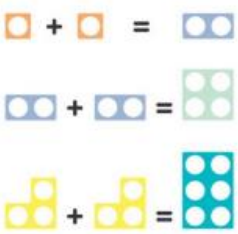
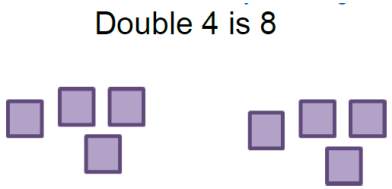
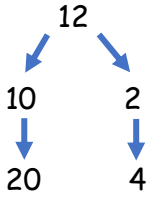
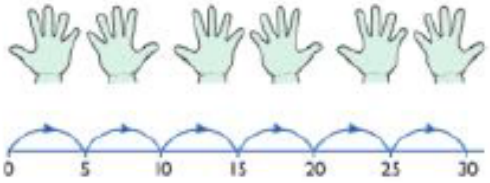
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT

MULTIPLICATION

EYFS / Year 1 **Doubling** Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Doubling is an amount twice	Use practical activities to show how to double a number  double 4 is 8 4 × 2 = 8 	Draw pictures to show how to double a number 	Partition a number and then double each part before recombining it back together.  20 + 4 = 24
Counting in multiples We are counting in multiples of ___ so we count every ___	  Count in multiples supported by concrete objects in equal groups	 	Count in multiples of a number aloud Write sentences with multiples of numbers 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30

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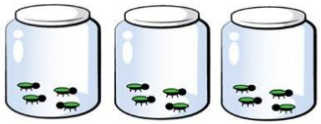
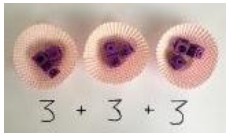
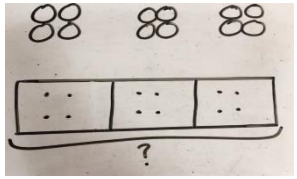
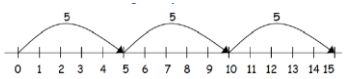
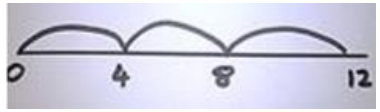
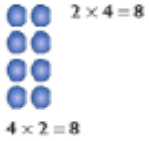
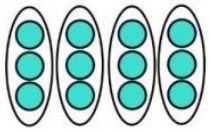
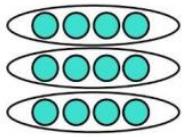
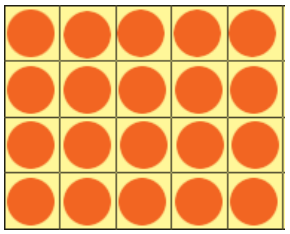
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Year 2 **Repeated addition** There are ____ in each group. There are ____ groups. We have to add ____ ____ times.	There are 3 equal groups, with 4 in each group  3 × 4 4 + 4 + 4  	  5 + 5 + 5 = 15	Write addition sentences to describe objects and pictures. 2 x 5  2 + 2 + 2 + 2 + 2 = 10 Abstract number line showing 3 groups of 4 
Arrays- showing commutative multiplication ____ lots of ____ is the same as ____ lots of ____.	Create arrays using counters / cubes to multiplication sentences   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  	Draw arrays in different rotations to find **commutative** multiplication sentences.  2×4=8     Link arrays to area of a rectangle	Use an array to write multiplication sentences and reinforce repeated addition  10 = 2 × 5 5 × 2 = 10 2 + 2 + 2 + 2 + 2 = 10 10 = 5 + 5

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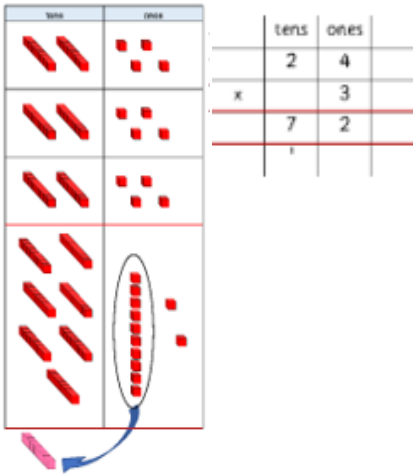
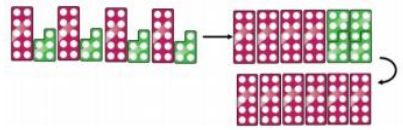
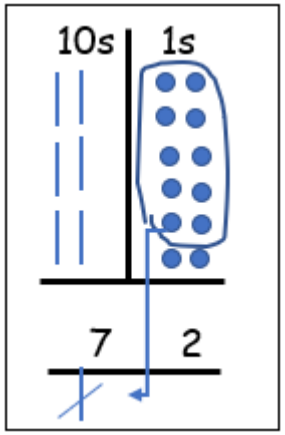
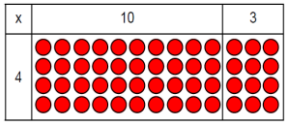
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Year 2 / 3 **Partition to multiply** _____ can be partitioned into _____ and _____. _____ lots of ___ ones is _____. _____ lots of _____ tens is _____. _____ ones add _____ tens is _____.	 25 x 4 = 	24 x 3 =  	4 x 15 = partition 4 x 10 = 40 4 x 5 = 20 recombine 40 + 20 = 70 4 x 15 = 70
Year 3 **Grid method** Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables	Show the link with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3 Move on to using Base 10 to move towards a more compact method.	Children can represent the work they have done with place value counters in a way that they understand. They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. | × | 30 | 5 | | | --- | --- | --- | | | 7 | 210 | 35 | | **210 + 35 = 245**

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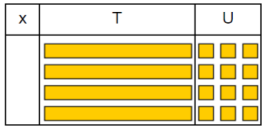
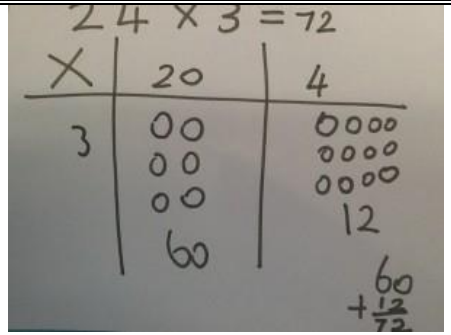
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	 4 rows of 13 Move on to place value counters to show how we are finding groups of a number.		Multiply by a 2 digit number showing the different rows within the grid method. | x | 200 | 30 | 2 | | 10 | 2000 | 300 | 20 | | 4 | 800 | 120 | 8 | 2000 + 800 + 300 + 120 + 20 + 8 = 2000 800 300 120 20 + 8 3248
Year 4 **Column multiplication** Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	Formal column method with place value counters. 6 x 23	Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods 23 x 6 =	leading to expanded 3 2 7 x 4 2 8 (7 x 4) 8 0 (20 x 4) 1 2 0 0 (300 x 4) 1 3 0 8

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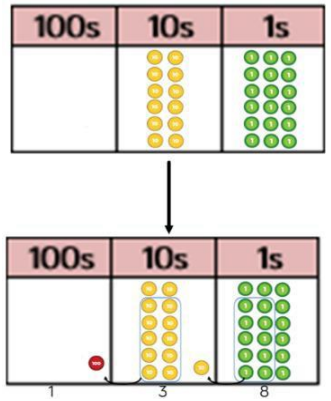
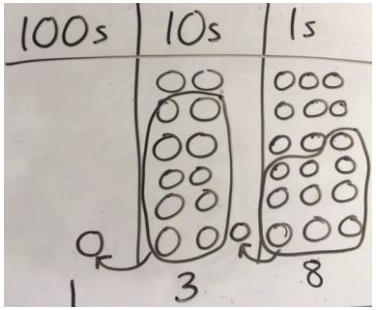
We always need to start at the ones. ____ ones times ____ ones is ___ ones. ____ ones times ____ tens is ____ tens. Because we are multiplying by ten, we need to add in a zero as a place value holder. We cannot have more than one digit in any place value column, so we need to exchange ___ ones as ____ ten (and etc as needed)			~~1~~ leading to compact 3 2 7 x 4 1 3 0 8 ~~1~~ ~~2~~
Year 5 / 6 **Column multiplication** Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.	**Use all above strategies** Children should be confident with using expanded notation to multiply	**Use all above strategies** Develop short method of multiplying with up to 4 digits by 1 or 2 digits including use of decimals 1 3 4 2 x 1 8 1 3 4 2 0 1 0 7 3 6 2 4 1 5 6	Show children the importance of lining up numbers including the decimal point. Talk about disregarding the decimal point and replacing it by however many decimal places if this is easier for children 2.4 3 x 7 1 7.0 1 3 2 .

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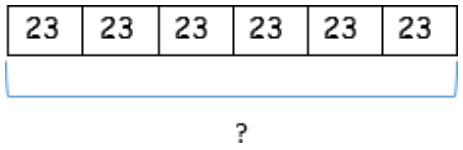
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Conceptual variation: different ways to ask children to solve 6 x 23			
	Mai had to swim 23 lengths, 6 times a week. How many lengths did she swim in one week? With the counters, prove that 6 x 23 = 138	Find the product of 6 and 23 6 × 23 = ? ? = 6 × 23 23 × 6 ____ 6 × 23 ____	What is the calculation? What is the product? 

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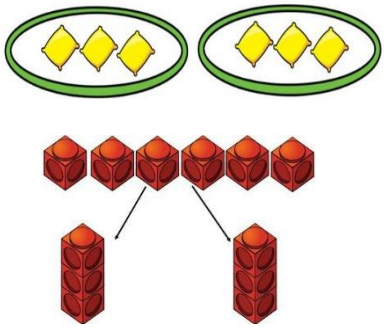
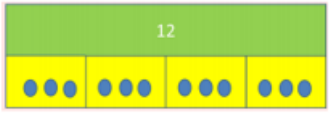
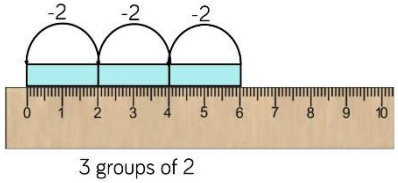
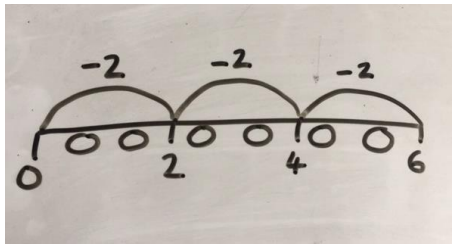
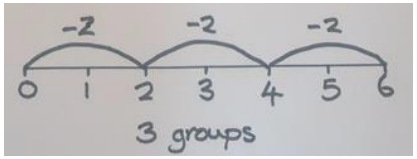
DIVISION

EYFS / Year 1 **Sharing objects into groups** _____ shared equally between _____ is _____		Children use pictures or shapes to share quantities.  8 ÷ 2 = 4  12 ÷ 4 = 3 Also use part-whole model	Share 9 buns between 3 people. How many buns will each person get? 9 ÷ 3 = 3
Repeated subtraction We need to divide _____ into groups of _____, so we need to take away _____ each time. We have _____ groups of _____.	6 ÷ 2 =  3 groups of 2	 	Abstract number line to represent the equal groups that have been subtracted. 

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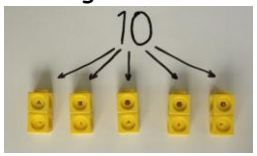
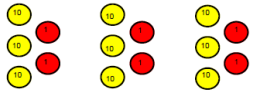
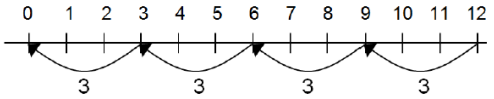
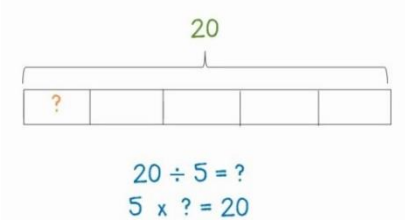
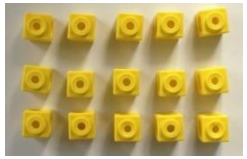
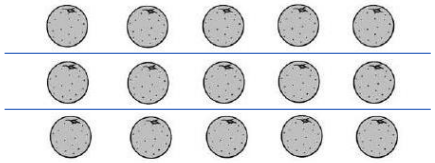
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Year 2 **Division as grouping** ____ split into ___ groups means there would be ____ in each group.	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.  96 ÷ 3 = 32   	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  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?
Division within arrays	Link division to multiplication by creating an array and thinking about the number sentences that can be created.  15 ÷ 3 = 5 15 ÷ 5 = 3 3 x 5 = 15 5 x 3 = 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 four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7

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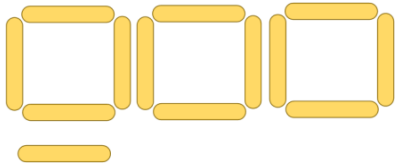
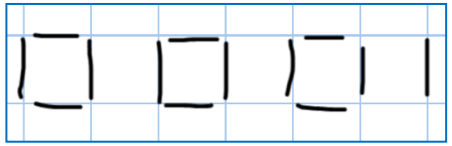
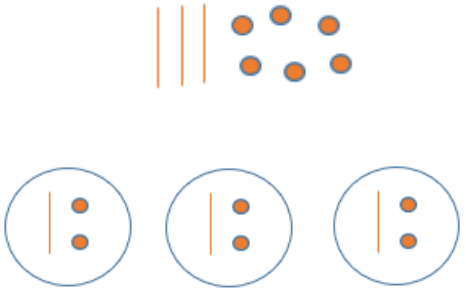
Division with a remainder A remainder is what is left over after splitting into equal groups. ____ divided by ___ gives ____ equal groups, with _____ remaining.	Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.  There are 3 whole squares, with 1 left over.	Children to represent the lollipop sticks pictorially.  There are 3 whole squares, with 1 left over.	13 ÷ 4 – 3 remainder 1 Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line. '3 groups of 4, with 1 left over'
Year 3 **Short division (no exchange)** In division, we start from the largest place value column. We start from the right. ___ is __ tens and ___ ones. ____ tens divided by ____ is ____. _____ ones divided by _____ is _____. ____ add ____ is _____. e.g. 36 is 3 tens and 6 ones. 3 tens divided by 3 is one ten. 6 ones divided by 3 is 2 ones. One ten add 2 ones is 12.	Should first be shown using base 10 and shared into groups, to understand the place value. Use place value counters to divide using the bus stop method alongside  		36 ÷ 3 = 12 2 3 2 | 4 6

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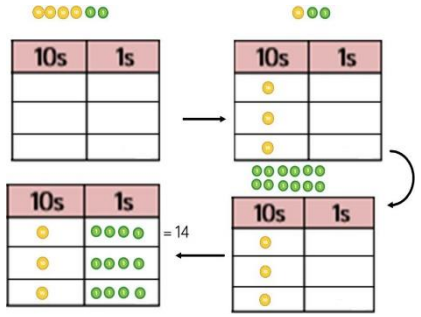
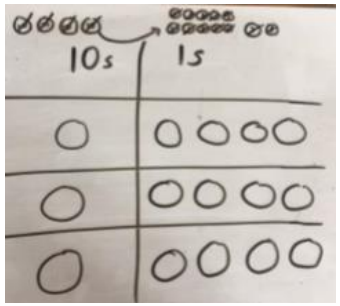
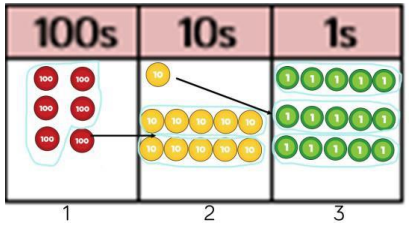
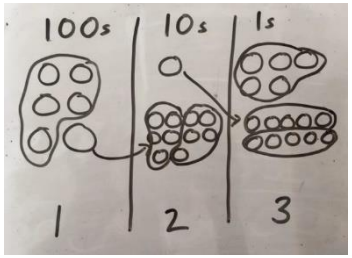
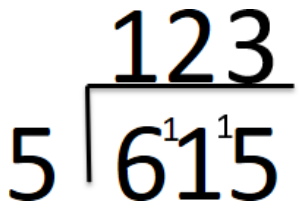
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Short division (with exchange) e.g. 42 is 4 tens and 2 ones. We can share 3 tens equally with one ten in each group but there is one ten left over. We need to exchange this ten for ten ones. Now we have twelves ones. 12 shared between 3 is 4 ones. In each group there is one ten and 4 ones. 10 add 4 is 14.	Sharing using place value counters. 42 ÷ 3 = 14 	Represent the place value counters pictorially. 	Children to be able to make sense of the place value counters and write calculations to show the process. 42 ÷ 3 42 = 30 + 12 30 ÷ 3 = 10 12 ÷ 3 = 4 10 + 4 = 14
Year 4 onwards Short division	using place value counters to group. 615 ÷ 5  1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? -5. Exchange 1 ten for 10 ones. -6. How many groups of 5 ones can you make with 15 ones?	Represent the place value counters pictorially. 	Children to the calculation using the short division scaffold. 

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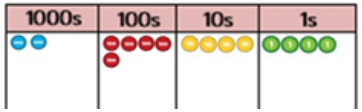
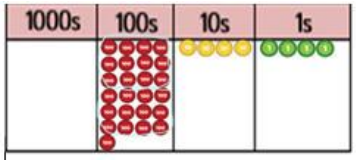
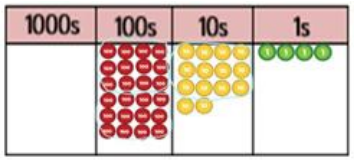
STRATEGY STEM SENTENCE	CONCRETE	PICTORIAL	ABSTRACT
Long division	Using place value counters 2544 ÷ 2		



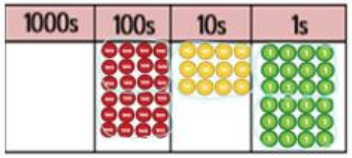
We can't group 2 thousands into groups of 12 so will exchange them.



We can group 24 hundreds into groups of 12 which leaves with 1 hundred



After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens



After exchanging the 2 tens, we have 24 ones. We can group 24 ones onto 2 groups of 12, which leaves no remainder

$$\begin{array}{r} 02 \\ 12\overline{)2544} \\ \underline{24} \\ 1 \end{array}$$

$$\begin{array}{r} 021 \\ 12\overline{)2544} \\ \underline{24} \\ 14 \\ \underline{12} \\ 2 \end{array}$$

$$\begin{array}{r} 0212 \\ 12\overline{)2544} \\ \underline{24} \\ 14 \\ \underline{12} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

Move onto divisions with a remainder.

$$\begin{array}{r} 86\ r\ 2 \\ 5\overline{)432} \\ \underline{3} \end{array}$$

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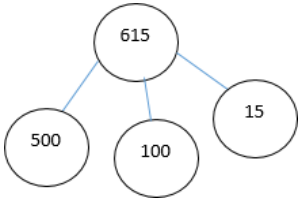
Children to be able to divide so that there are no remainders, going into the decimal values if needed. Use written division methods in cases where the answer has up to two decimal places.			Pupils should be encouraged to note down multiples when dividing by a 2 digit number 1 4 . 6 16 21 3 5 | 5 1 1 . 0 35 70 105 140 ...
Conceptual variation: different ways to ask children to solve 615 ÷ 5 =			
Using the part whole model below, how can you divide 615 by 5 without using short division? 	I have £615 and share it equally between 5 bank accounts. How much will be in each account? 615 pupils need to be put into 5 groups. How many will be in each group?	5 | 615 615 ÷ 5 = ? ? = 615 ÷ 5	What is the calculation? What is the answer?