RIVERSIDE PRIMARY

Maths Calculation Policy

July 2021

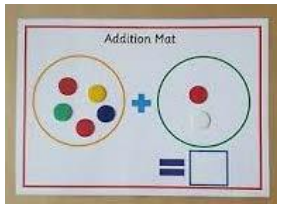
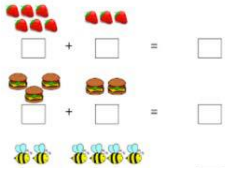
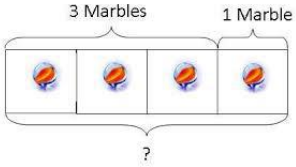
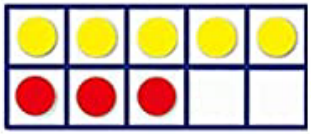
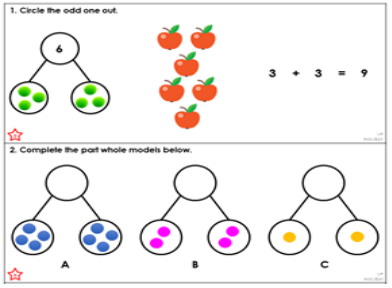
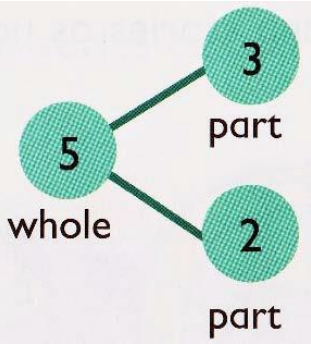
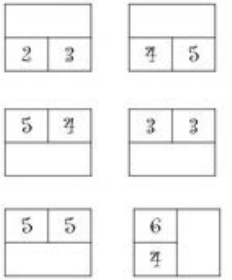
At Riverside Primary School we believe that children should be introduced to the processes of calculation through concrete, pictorial and abstract (CPA) forms. As children begin to understand the underlying ideas they develop ways of recording to support their thinking and calculation methods, use particular methods that apply to special cases, and learn to interpret and use the signs and symbols involved. Choosing the appropriate strategy, recording in mathematics and in calculation in particular is an important tool both for furthering the understanding of ideas and for communicating those ideas to others.

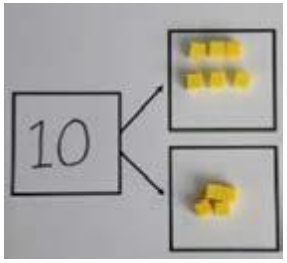
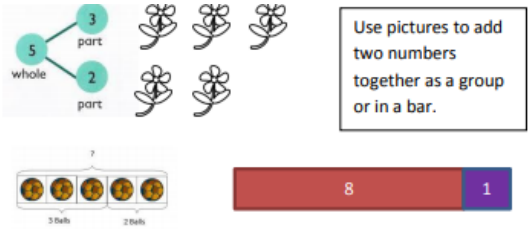
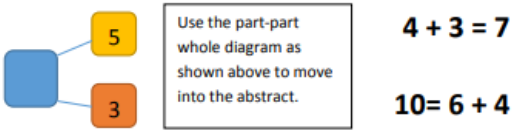
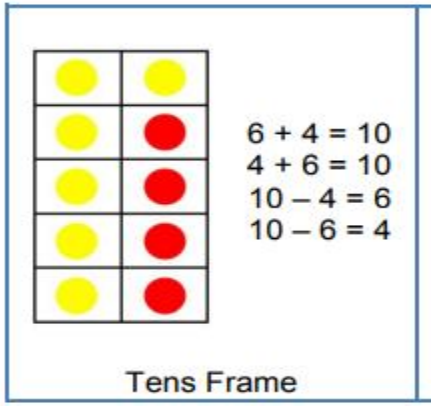
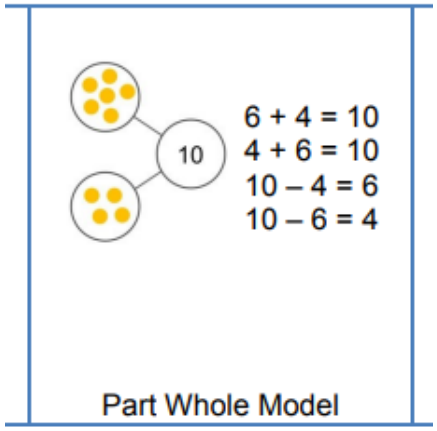
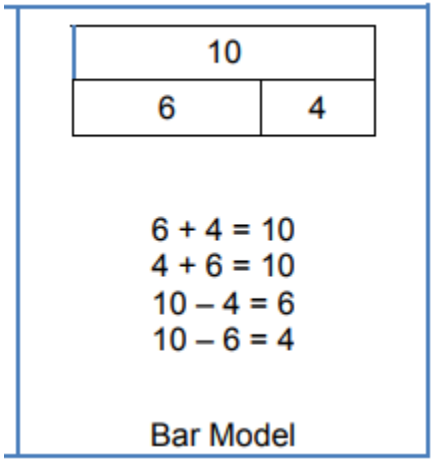
A useful written method is one that helps children carry out a calculation and can be understood by others. Written methods are complementary to mental methods and should not be seen as separate from them. The aim is that children use mental methods when appropriate, but for calculations that they cannot do in their heads they use an efficient written method accurately and with confidence. It is important children acquire secure mental methods of calculation and one efficient written method of calculation for addition, subtraction, multiplication and division which they know they can rely on when mental methods are not appropriate.

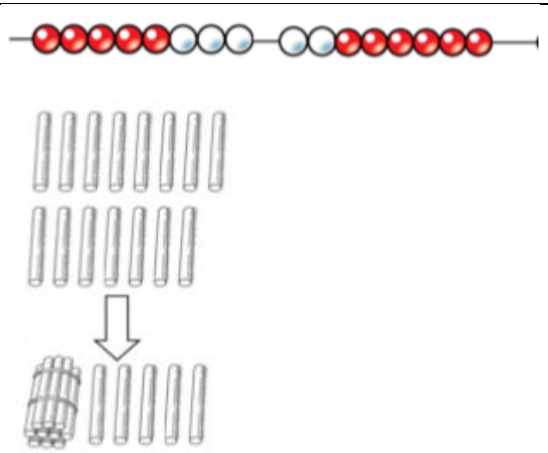
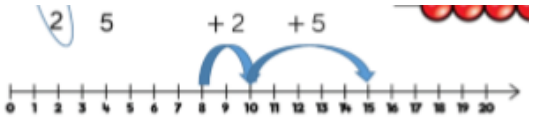
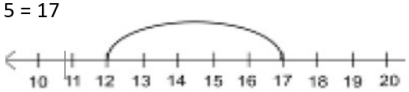
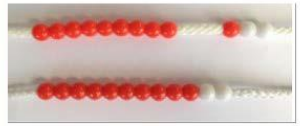
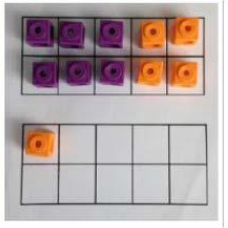
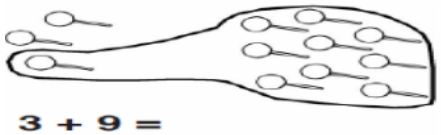
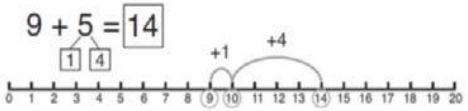
This document identifies progression in calculation strategies throughout the year groups and also shows examples of how to progress the children through the CPA approach. By the end of Year 6, children should be able to choose the most appropriate approach to solve a problem: making a choice between using jottings (an extended written method), an efficient written method or a mental method. This policy has been written to ensure consistency and progression throughout the school and reflects a whole school agreement.

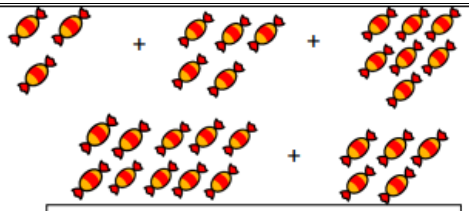
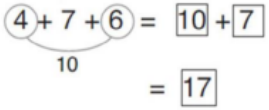
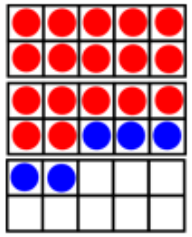
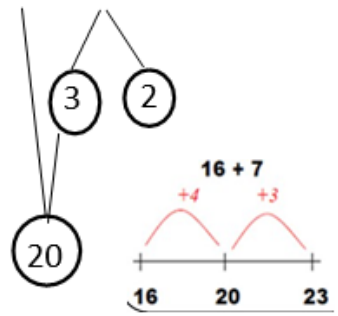
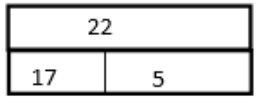
Addition

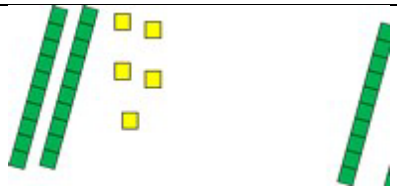
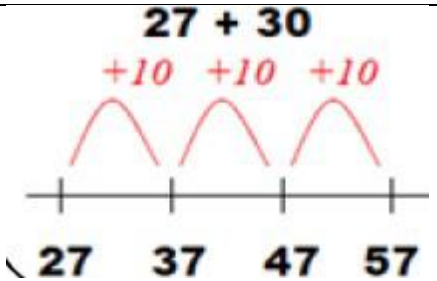
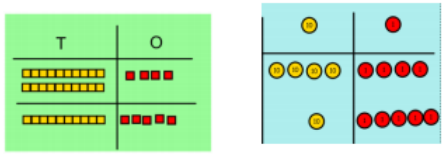
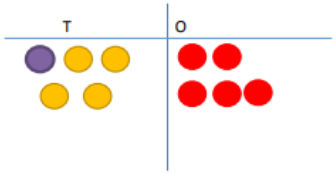
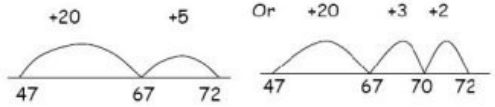
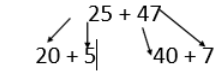
Addition – EYFS

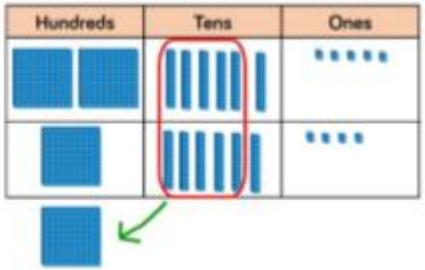
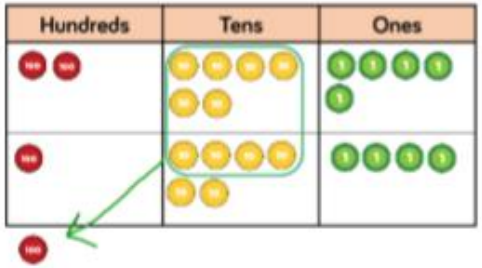
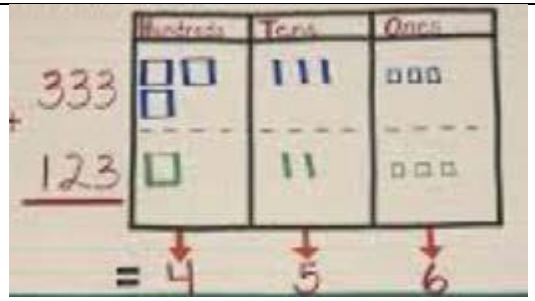
Objectives	Concrete	Pictorial	Abstract
– Knows that a group of things change in quantity when something is added. – Find the total number of items in two groups by counting all of them. – Says the number that is one more than a given number. – Finds one more from a group of up to five objects, then ten objects. – In practical activities and discussion, beginning to use the vocabulary involved in adding. – Using quantities and objects, they add two single digit numbers and count on to find the answer. – Solve problems including doubling.	   Use toys and general classroom resources for children to physically manipulate, group/regroup.    Use specific maths resources such as counters, snap cubes, Numicon etc. Use visual supports such as ten frames, part whole and addition mats, with the physical objects and resources that can be manipulated.  	 Two groups of pictures so children are able to count the total.  Use visual supports such as ten frames, part part whole and addition mats with pictures/icons.  Bar model using visuals, pictures/icons or colours.   	A focus on symbols and numbers to form a calculation. 5+2=7   * No expectation for children to be able to record a number sentence/addition calculation.

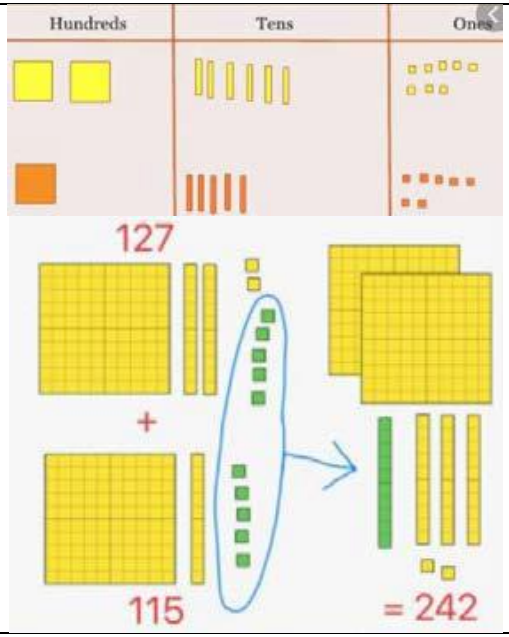
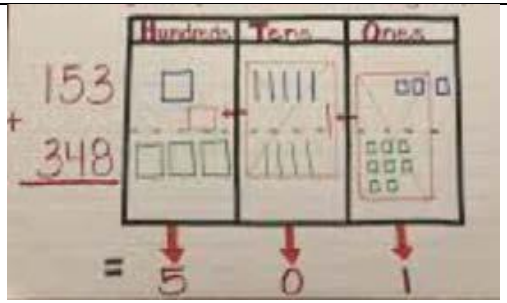
Addition – Year 1			
Objectives	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	 Use cubes to add two numbers together as a group or in a bar. (Some children may still need to use real objects)  Use part-part whole model	 The Bar Model will be continued from EYFS as a method to support problem solving involving addition, continuing with the concrete representations and moving onto using pictorial representations of objects. Some children will also move onto the abstract.	
Represent and use number bonds and related subtraction facts within 20	 (Some children may need to initially use real objects then move onto the representation, egg boxes may also be used to support this)		 Bar model and part-part whole to be used alongside abstract

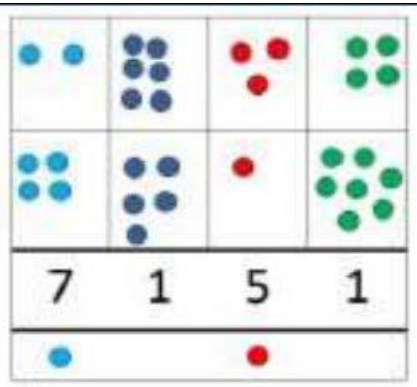
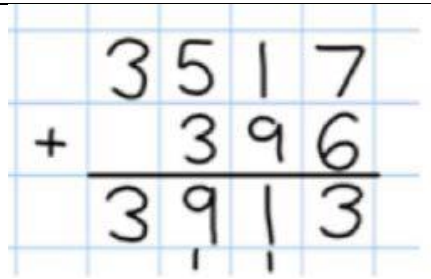
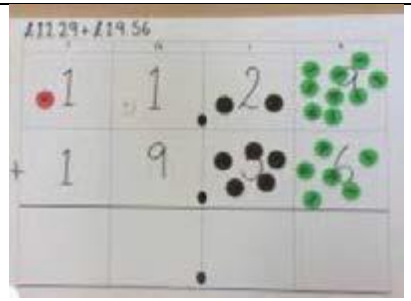
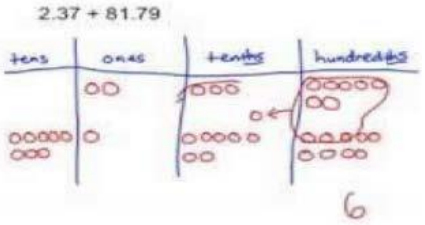
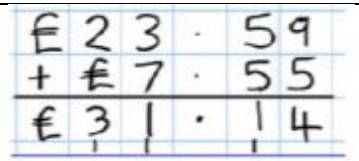
Addition and subtraction of one-digit and two-digit numbers to 20 including 0.		 Start at the larger number on the number line and count on in ones.	8 + 7 = 15
Start at the bigger number and counting on	Start with the larger number on the bead string and then count of to the smaller number 1 by 1 to find the answer.	12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	Place the larger number in your head and count on the smaller number to find your answer. Regrouping
Regrouping to make 10 (The 'Make 10' strategy)	 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10. Use ten frames.	 3 + 9 = Use pictures or a number line. Regroup or Partition the smaller number using the part part whole model to make 10. 	7 + 4 = 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?
Vocabulary	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, balancing, part, part, whole		

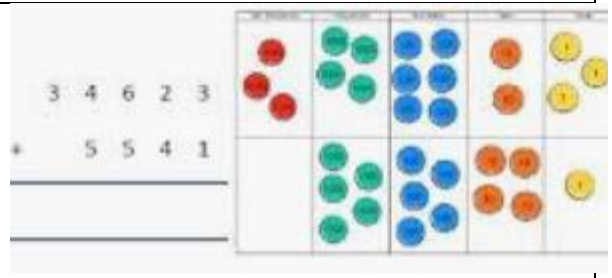
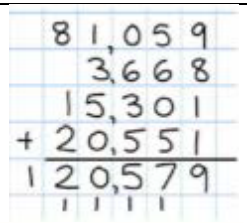
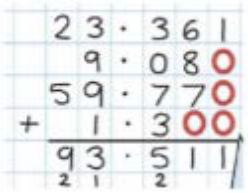
Addition – Year 2			
Objectives	Concrete	Pictorial	Abstract
Adding 3 1-digit numbers	**4 + 7 + 6= 17** Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.
Adding a 2-digit number and ones	 17 + 5 = 22 Use ten frame to make 'magic ten Children explore the pattern. 17 + 5 = 22 27 + 5 = 32	17 + 5 = 22 Use part part whole and number line to model.  Bar model 	17 + 5 = 22 Explore related facts 17 + 5 = 22 5 + 17 = 22 22—17 = 5 22—5 = 17 

Adding a 2-digit number and multiples of 10	 25 + 10 = 35 Explore that the ones digit does not change	 Base 10 may be used above the number line initially. The calculation will be shown alongside the number line to see the connection	27 + 10 = 37 27 + 20 = 47 27 + □ = 57
Adding two 2-digit numbers (No re-grouping)	**24 + 15=** Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.  (Some children may not be ready for place value counters in Y2) Numicon may also be used 	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.   Use number line and bridge ten using part whole if necessary. Base 10 may be used above the number line. The calculation will be shown alongside the number line to see the connection	Partitioning:  20 + 40 = 60 5+ 7 =12 60 + 12 = 72 *Recording addition in columns supports place value and prepares for formal written methods with larger numbers.* Toward the end of the year, children move to more formal recording using partitioning method: 40 + 7 30 + 5 70 + 12
Vocabulary	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary		

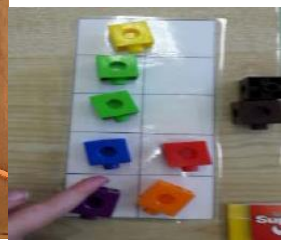
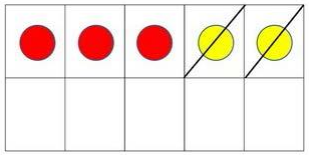
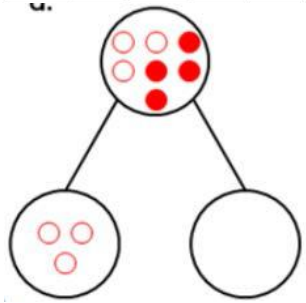
Addition – Year 3			
Objectives	Concrete	Pictorial	Abstract
Add and subtract numbers with up to 3-digits, using formal written methods of columnar addition Column addition (no regrouping)	 Using manipulatives (dienes, numicon, counters), children are to line up hundreds, tens and ones.  Children should be secure with using PV counters before moving onto pictorial. The calculation will be shown alongside the model used to see the connection	 Children are to draw, in a PV frame, the manipulatives, that they are using. Secure knowledge of representation with the PV columns.	2 2 3 + 1 1 4 3 3 7 Children to move onto recording more formally. Some children may need to use the expanded method (see below).

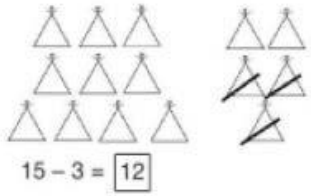
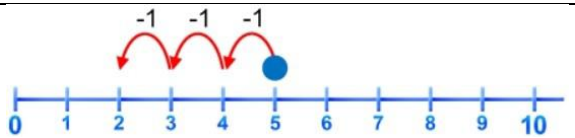
Column addition (with exchanging)		 Children can draw a representation of the grid to further support their understanding, exchanging the ten ***underneath*** the line.	$\begin{array}{rcl} 20 & + & 5 \\ \underline{40} & + & \underline{8} \\ 60 & + & 13 \end{array} = 73$ Children are to begin with the abstract: expanded form. For those children, that are confident after AFL, the below method should be used. $\begin{array}{r} 536 \\ +\,85 \\ \hline 621 \\ \hline 1\,1 \end{array}$
Vocabulary	addition add, more, and make, sum, total, altogether, double, near double, half, halve, tens boundary, hundreds boundary		

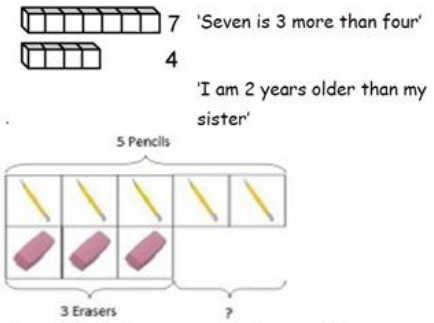
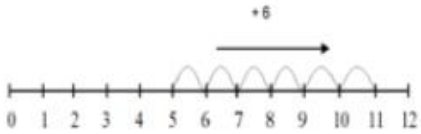
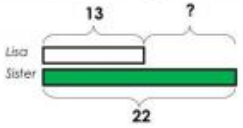
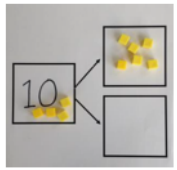
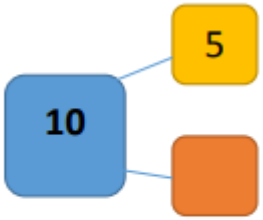
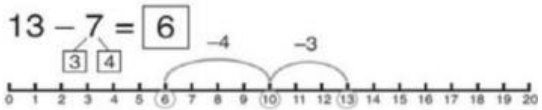
Addition – Year 4			
Objectives	Concrete	Pictorial	Abstract
Using formal written methods of columnar addition where appropriate add numbers with up to 4 digits (with exchange)	Children continue to use dienes or place value counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.  The calculation will be shown alongside the manipulative used to see the connection	 Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding.	 Continue from previous work to exchanging hundreds as well as tens.
Add decimals with 2 decimal places, including money.	 Introduce decimal place value counters and model exchange for addition.	 	 As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.
Vocabulary	addition add, more, and make, sum, total, altogether, double, near double, half, halve, tens boundary, hundreds boundary, decimal, decimal point		

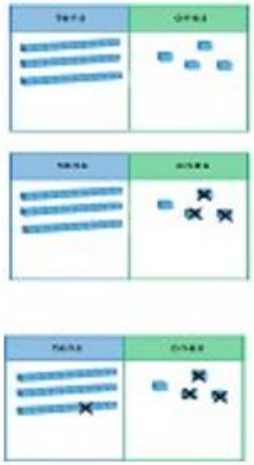
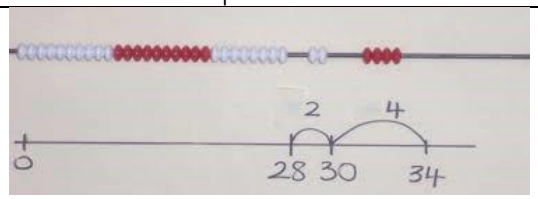
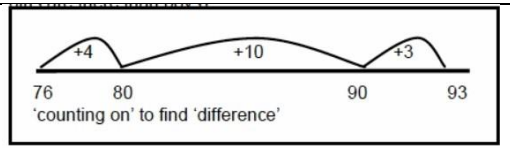
Addition – Year 5/6			
Objectives	Concrete	Pictorial	Abstract
Add numbers with more than 4 digits.	See Year 4	See Year 4	 Children should have abstract supported by a pictorial or concrete if needed.
Add several numbers of increasing complexity, including adding money, measure and decimals with different numbers of decimal points.	See Year 4	See Year 4	  Insert zeros for place holders.
Vocabulary	addition add, more, and make, sum, total, altogether, double, near double, half, halve, tens boundary, hundreds boundary, decimal, decimal point		

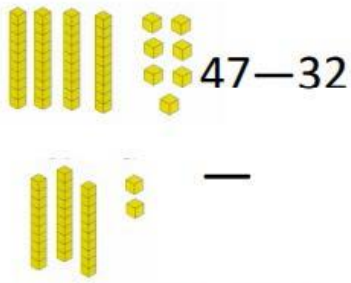
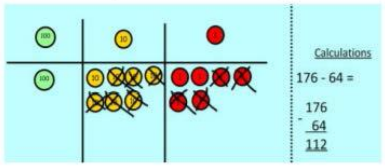
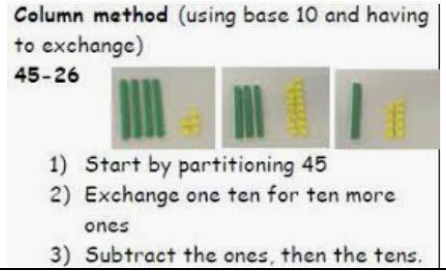
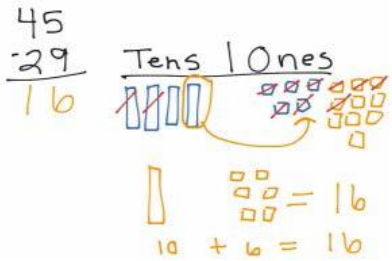
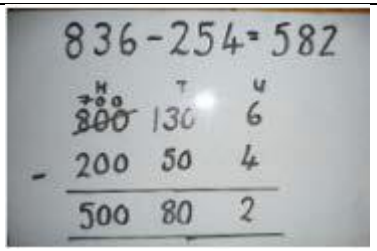
Subtraction

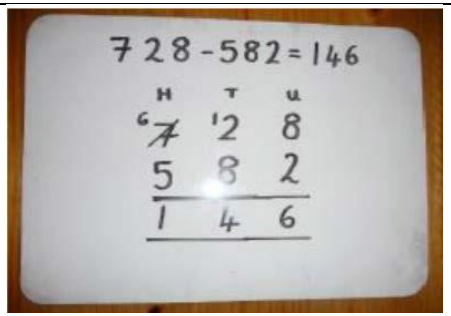
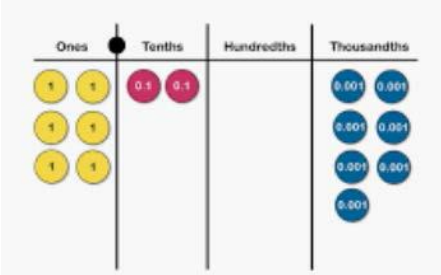
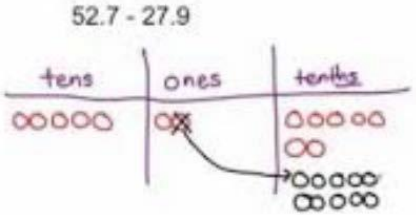
EYFS – Subtraction			
Objectives	Concrete	Pictorial	Abstract
- Knows that a group of things change in quantity when something is taken away - Find one less from a group of five objects, then ten objects. - In practical activities and discussion, beginning to use the vocabulary involved in subtracting. - Using quantities and objects, they subtract two single digit numbers and count back to find the answer.	Use toys and general classroom resources for children to physically manipulate, group/regroup   Use specific maths resources such as snap cubes, Numicon, bead strings etc   Use visual supports such as ten frames, part part whole and subtraction mats, with the physical objects and resources that can be manipulated.	 6 - 4 =  3 - 1 =  5 - 3 =  7 - 2 = A group of pictures for children to cross out or cover quantities to support subtraction.   Use visual supports such as ten frames, part part whole and bar model with pictures/icons.	A focus on symbols and numbers to form a calculation. * No expectation for children to be able to record a number sentence/addition calculation.

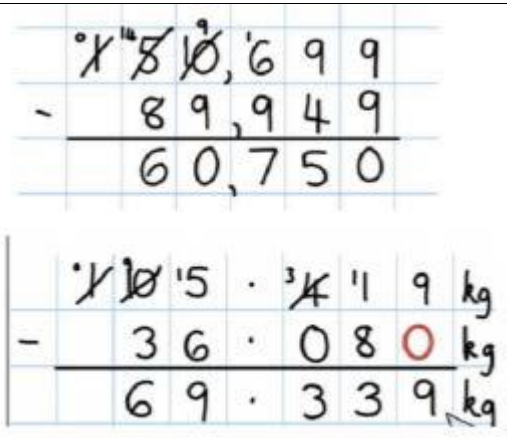
Year 1 – Subtraction			
Objectives	Concrete	Pictorial	Abstract
Subtract one-digit and two-digit numbers to 20, including 0. Taking away ones	Use physical objects, counters , cubes etc to show how objects can be taken away.  6—4 = 2  4—2 = 2	Cross out drawn objects to show what has been taken away.   15 – 3 = 12	7—4 = 3 16—9 = 7
Counting back	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 then away counting backwards as you go. 	 Count back on a number line or 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 you)

Find the difference	Compare objects and amounts  Lay objects to represent bar model.	 Count on to find the difference. **Comparison Bar Models** Draw bars to find the difference between 2 numbers. *Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.*  	Hannah has12 sweets and her sister has 5. How many more does Hannah have than her sister?
Represent and use number bonds and related subtraction facts within 20 Part-part whole model	 Link to addition. Use PPW model to model the inverse. If 10 is the whole and 6 is one of the arts, what s the other part? 10—6 = 4	Use a pictorial representation of objects to show the part-part whole model	 **Move to using numbers within the part whole model.**
Make 10	**14 – 9 =**  Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.	 Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.	16 – 8= How many do we take off to reach the next 10? How many do we have left to take off?
Vocabulary	equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is. . .		

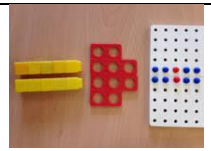
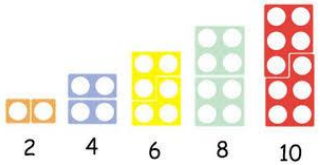
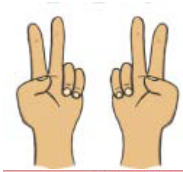
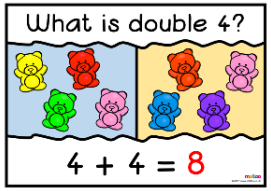
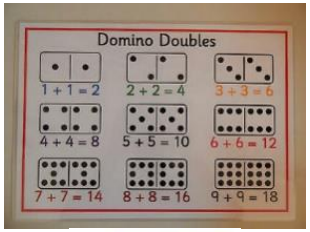
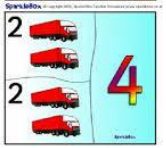
Year 2 – Subtraction			
Objectives	Concrete	Pictorial	Abstract
Subtract a two-digit number and ones, a twodigit number and tens, two two-digit numbers Partitioning to subtract without re- Grouping: 'Friendly numbers'	34—13 = 21  Use Dienes to show how to partition the number when subtracting without regrouping. The calculation will be shown alongside the manipulative used	Children draw representations of Dienes and cross off.  43—21 = 22	43—21 = 22 Recording subtraction in columns supports place value and prepares for formal written methods with larger numbers. Toward the end of the year, children move to more formal recording using partitioning method: e.g. 43-21=22 40 and 3 -20 and 1 20 and 2
Make ten strategy	 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 the rest.	93—76 = 17
Vocabulary	equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is. . .difference, count on, strategy, partition, tens units		

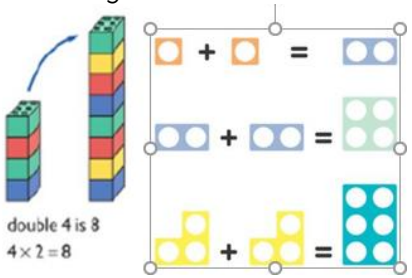
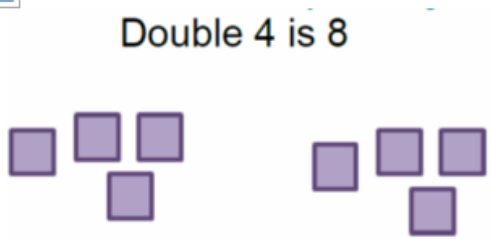
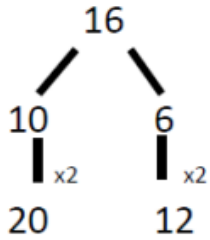
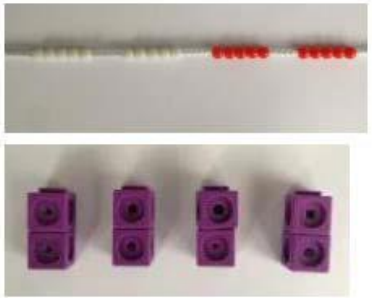
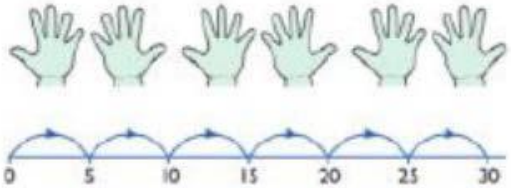
Year 3 – Subtraction			
Objectives	Concrete	Pictorial	Abstract
To subtract numbers with up to three-digits, using formal written methods of columnar subtraction Column subtraction (without exchanging)	 Use base 10 or Numicon to model The calculation will be shown alongside the model chosen to see the connection	Children are to be secure with use of PV counters before moving onto abstract. 	Children should begin with the expanded form. Moving onto a more formal way as below.
Column Subtraction (with exchanging)	Begin with base 10 or Numicon. Move to pv counters, modelling the exchange of a ten into ten ones. Use the phrase 'take and make' for exchange. 	 When confident, children can find their own way to record the exchange/regrouping	 Children should begin with the expanded form. Moving onto a more foraml way as below (bottom picture).
Vocabulary	equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is. . .difference, count on, strategy, partition, tens units		

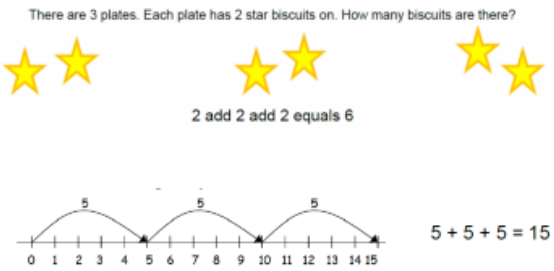
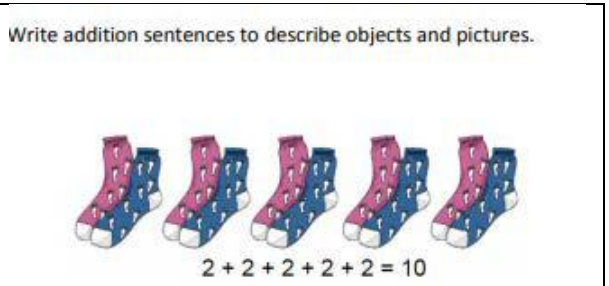
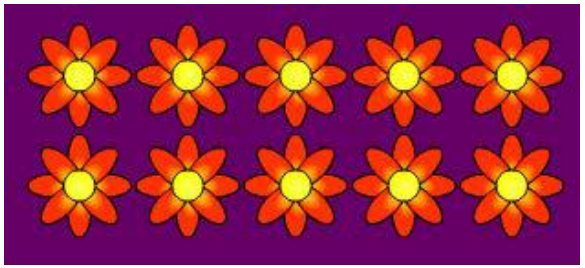
Year 4 – Subtraction			
Objectives	Concrete	Pictorial	Abstract
Subtract numbers with up to 4 digits using the formal written methods appropriate of columnar subtraction where appropriate Year 4 subtraction with up to 4 digits.	Model process of exchange using Numicon, base ten and then move to PV counters. Use the phrase 'take and make' for exchange- see Y3 The calculation will be shown alongside the model chosen to see the connection	Children to draw pv counters and show their exchange—see Y3 The calculation will be shown alongside the model chosen to see the connection	 This will lead to an understanding of subtracting any number including decimals.
Introduce decimal subtraction through context of money	Children to be encouraged to use counters to represent numbers and take counters away to subtract. 	When confident, children can find their own way to record the exchange/regrouping 	
Vocabulary	equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is. . .difference, count on, strategy, partition, tens units		

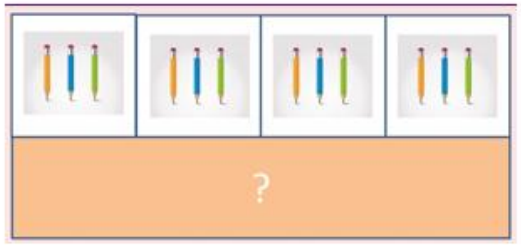
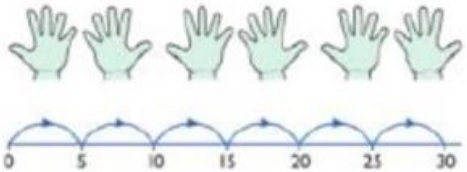
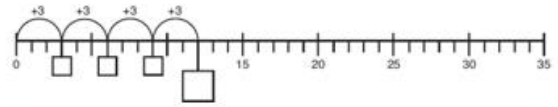
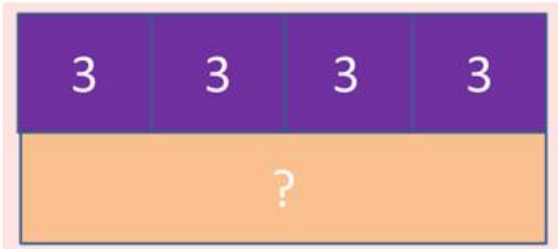
Year 5/6 – Subtraction			
Objectives	Concrete	Pictorial	Abstract
Subtract with at least 4 digits, including money and measures. Subtract with increasingly large and more complex numbers and decimal values (up to 3 decimal place).	See Year 4	See year 4	
Vocabulary	equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is. . .difference, count on, strategy, partition, tens units		

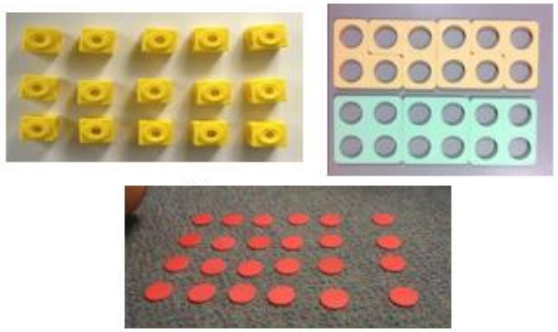
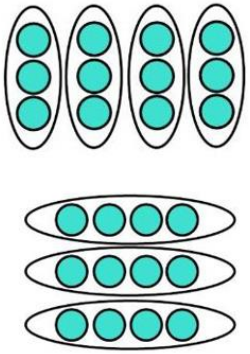
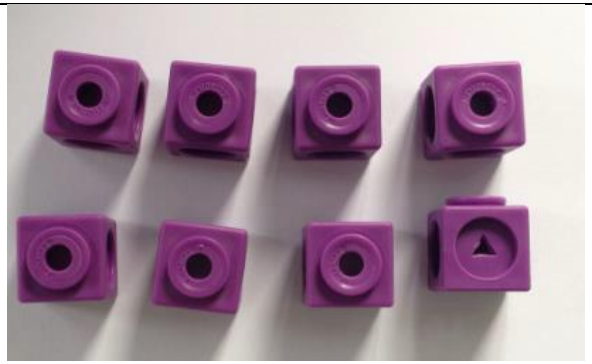
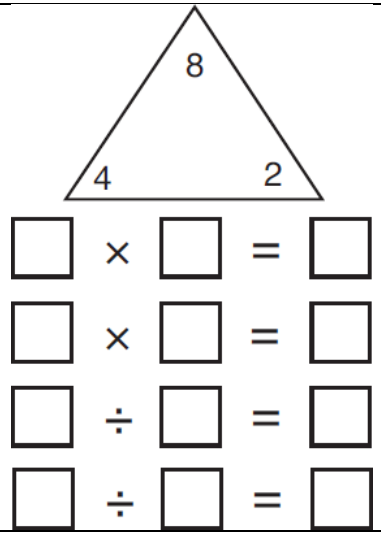
Multiplication

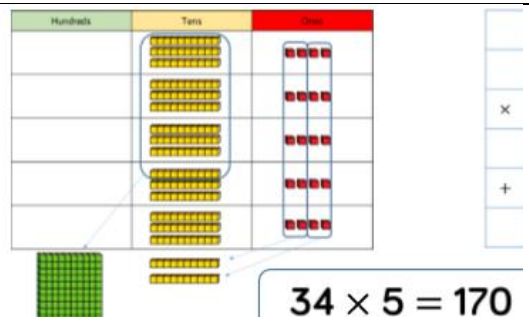
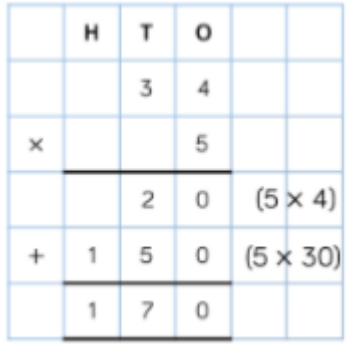
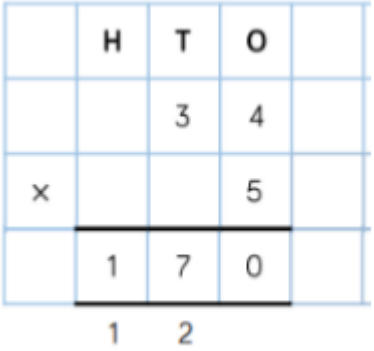
EYFS – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Solve problems including doubling	   Counting and other maths resources for children to make 2 equal groups. Physical and real life examples that encourage children to see concept of doubling as adding two equal groups.  	Pictures and icons that encourage children to see concept of doubling as adding two equal groups.    	1+1= 7+7= 2+2= 8+8= 3+3= 9+9= 4+4= 10+10= 5+5= 11+11= 6+6= 12+12= Addition calculations to model adding two equal groups.

Year 1 – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Doubling	Use practical actives to demonstrate doubling. Including cubes and numicon. 	Draw pictures to show how numbers double 	Partition a number and the double each part before recombining it back together. 
Counting in multiples	 Count in multiples supported by concrete objects in equal groups	 Use a number line or pictures to continue support in 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**

Repeated addition	 Use different objects to add equal groups.		
Understanding arrays	Use objects laid out in arrays to find the answers to 2 lots 5, 3 lots of 2 etc. 		3 x 2 = 6 2 x 5 = 10
Vocabulary	Groups of, lots of, times, array, altogether, multiply		

Year 2 – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Counting in multiples of 2, 3, 4, 5, 10 from 0 (repeated addition)	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models.  5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40  	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 is commutative	Create arrays using counters, cubes and arrays. 	Use representations of arrays to show different calculations. 	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 = 4 X 2 8 = 2 X 4 2 = 8 ÷ 4 4 = 8 ÷ 2
Vocabulary	Groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, sets of, equal groups, times as big as, commutative.		

Year 3 – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Multiplying two digit number by a one digit number Grid method progressing to the formal method. Solving problems including missing number problems, integer scaling problems. .	 Move on to place value counters to show how we are finding groups of a number.  Add up each column, starting with the ones making any exchanges needed. The calculation will be shown alongside the model chosen to see the connection	Children can represent their work with PV counters in a way that they understand. The can draw the counters using colours to show the different amounts. 	 

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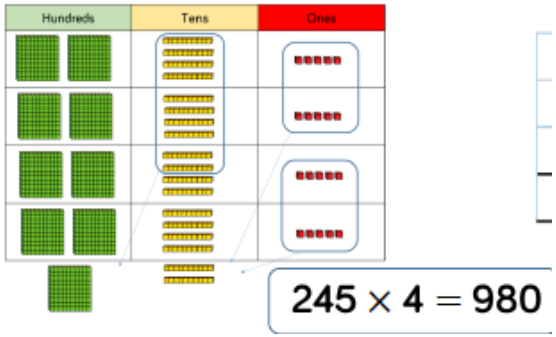
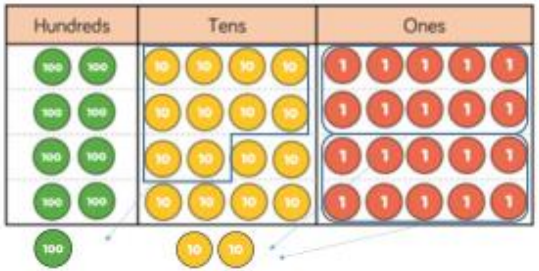
<td>Multiplying three digit number by a one digit number

Grid method progressing to the formal method.

Solving problems including missing number problems, integer scaling problems.</td>
<td> 

Move on to place value counters to show how we are finding groups of a number.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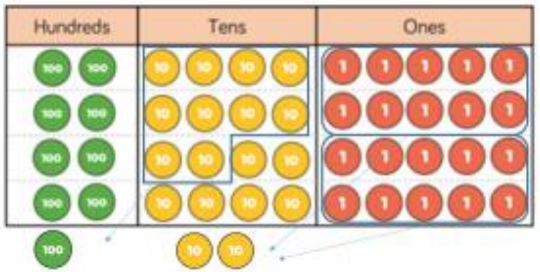
<td>Children can represent their work with PV counters in a way that they understand. The can draw the counters using colours to show the different amounts
 
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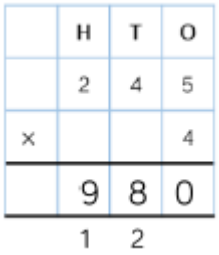
<td> 
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<tr>
<td>Vocabulary</td>
<td colspan="3">Groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, sets of, equal groups, times as big as, commutative, product, multiples of, scale up</td>
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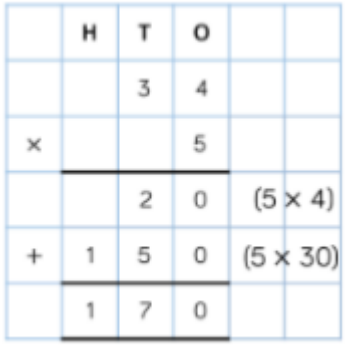
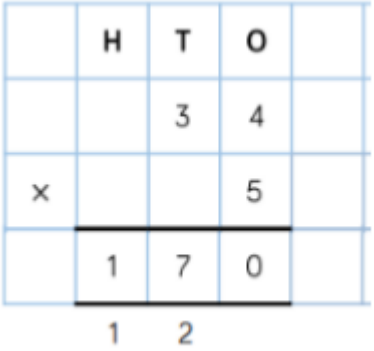
Year 4 – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Multiplying two digit number by a one digit number Grid method progressing to the formal method. Solving problems including missing number problems, integer scaling problems. .	 Move on to place value counters to show how we are finding groups of a number.  Add up each column, starting with the ones making any exchanges needed. The calculation will be shown alongside the model chosen to see the connection	Children can represent their work with PV counters in a way that they understand. The can draw the counters using colours to show the different amounts. 	 

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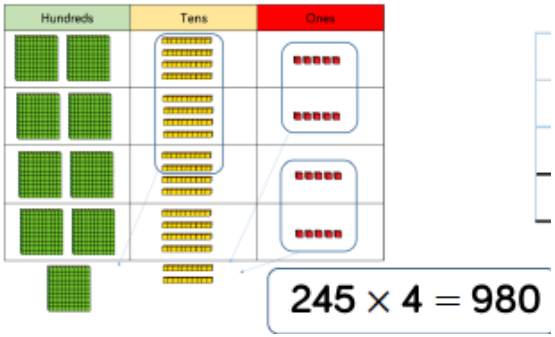
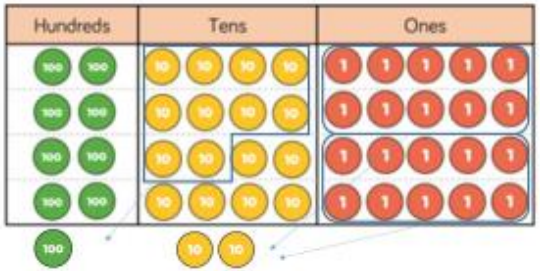
<td>Multiplying two digit number by a one digit number

Grid method progressing to the formal method.

Solving problems including missing number problems, integer scaling problems.</td>
<td> 

Move on to place value counters to show how we are finding groups of a number.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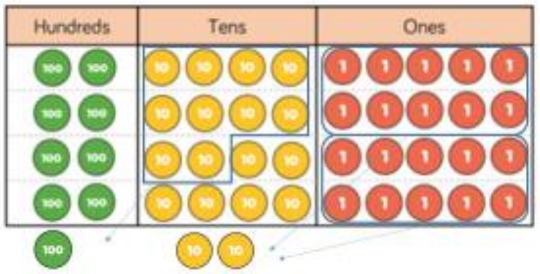
<td>Children can represent their work with PV counters in a way that they understand. The can draw the counters using colours to show the different amounts
 
</td>
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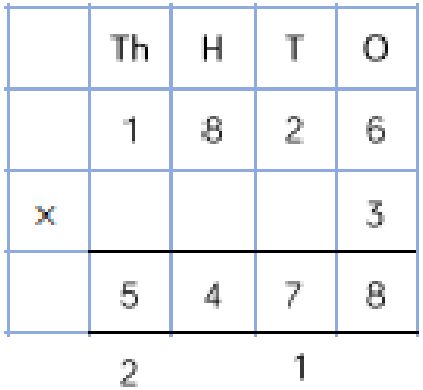
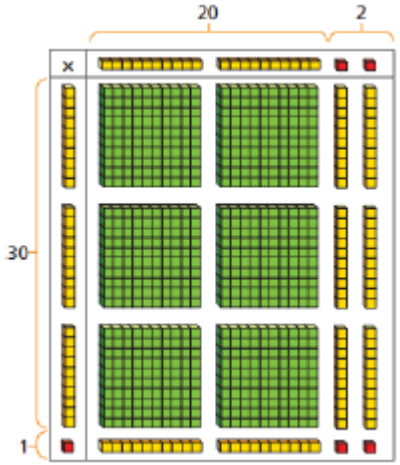
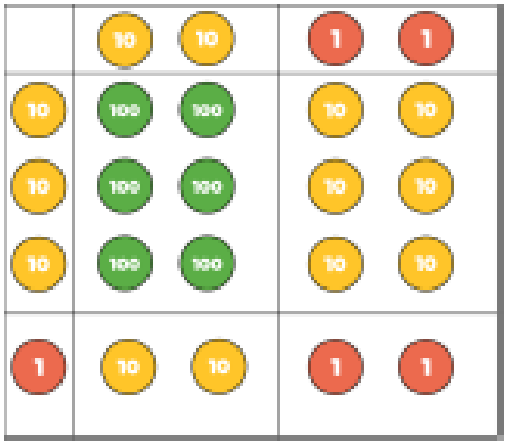
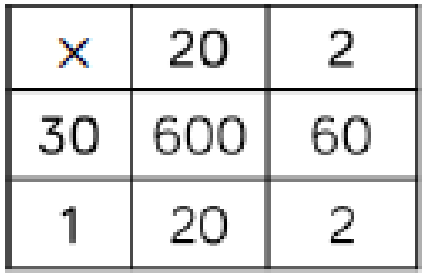
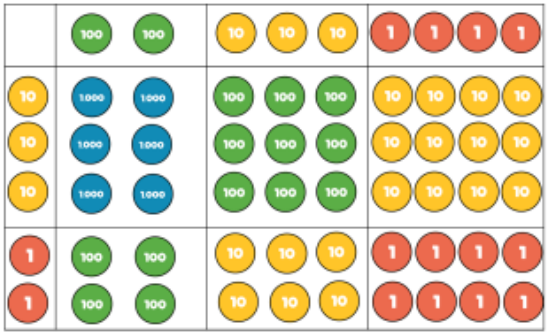
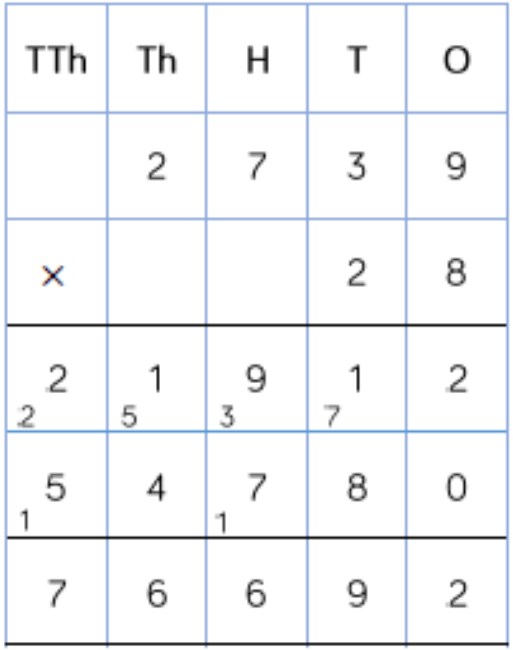
<tr>
<td>Vocabulary</td>
<td colspan="3">Groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, sets of, equal groups, times as big as, commutative, product, multiples of, scale up, inverse, derive</td>
</tr>
</table>

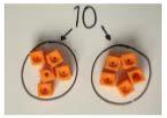
Year 5 – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Multiply numbers up to 4-digits by a one-digit number using the format written method, including long multiplication for 2-digit numbers Column multiplication for 3 and 4 digits x 1 digit	Manipulative may still be used with the corresponding long multiplication modelled alongside	 1,826 × 3 = 5,478	 Th H T O 1 8 2 6 × 3 5 4 7 8 2 1
Multiply numbers up to 2-digits by a 2-digit number using the format written method, including long multiplication for 2-digit numbers Column multiplication for 2 digits x 2 digit	 20 2 30 1		 × 20 2 30 600 60 1 20 2

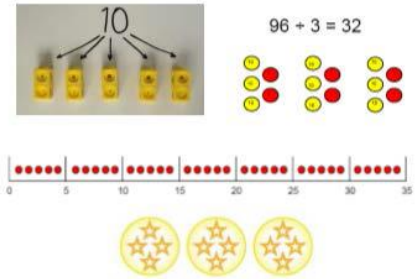
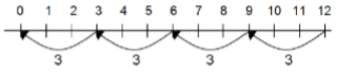
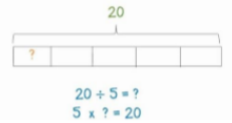
			<table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td></td><td>2</td><td>2</td></tr><tr><td>x</td><td></td><td>3</td><td>1</td></tr><tr><td></td><td></td><td>2</td><td>2</td></tr><tr><td></td><td>6</td><td>6</td><td>0</td></tr><tr><td></td><td>6</td><td>8</td><td>2</td></tr></table>
Multiply numbers up to 3-digits by a 2-digit number using the format written method, including long multiplication for 2-digit numbers Column multiplication for 3 digits x 2 digit			<table><tr><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>2</td><td>3</td><td>4</td></tr><tr><td>x</td><td></td><td>3</td><td>2</td></tr><tr><td></td><td>4</td><td>6</td><td>8</td></tr><tr><td>¹7</td><td>¹0</td><td>2</td><td>0</td></tr><tr><td>7</td><td>4</td><td>8</td><td>8</td></tr></table>
Vocabulary	Groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, sets of, equal groups, times as big as, commutative, product, multiples of, scale up, inverse, derive, factor pairs, composite numbers, prime number, factors, squared, cubed		

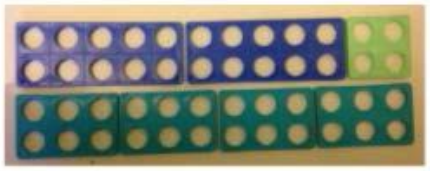
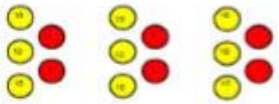
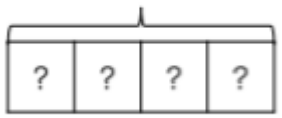
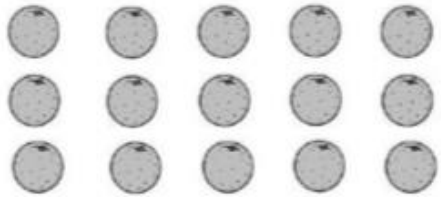
Year 6 – Multiplication			
Objectives	Concrete	Pictorial	Abstract
Multiply numbers up to 4-digits by a 2-digit number using the format written method, including long multiplication for 2-digit numbers Column multiplication for 4 digits x 2 digit			
Vocabulary	Groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, sets of, equal groups, times as big as, commutative, product, multiples of, scale up, inverse, derive, factor pairs, composite numbers, prime number, factors, squared, cubed		

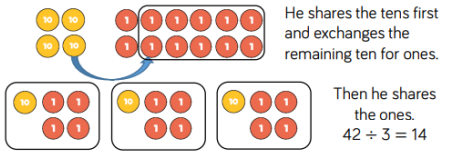
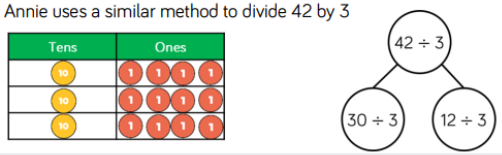
Division

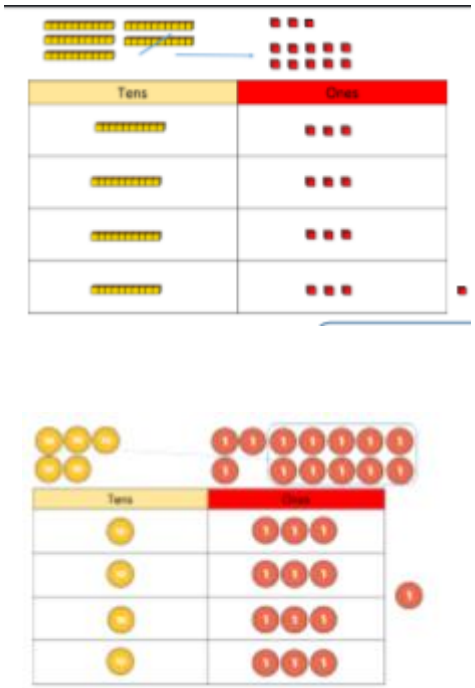
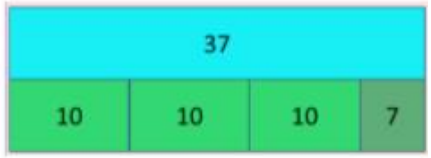
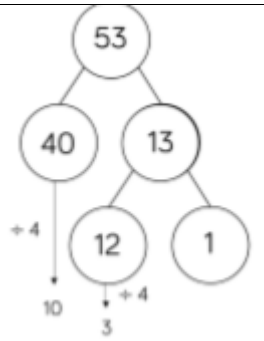
EYFS – Division			
Objectives	Concrete	Pictorial	Abstract
	Children have the opportunity to physically cut objects, food or shapes in half. Counting and other maths resources for children to share into two equal groups. Use visual supports such as halving mats and part part whole, with the physical objects and resources that can be manipulated. Counting and other maths resources for children to explore sharing between 3 or more.	Pictures and icons that encourage children to see concept of halving in relation to addition and subtraction knowledge. i.e. Knowing 4 is made of 2 groups of 2, so half of 4 is 2. Bar model with pictures or icons to support understanding of finding 2 equal parts of a number, to further understand how two halves make a whole. Pictures for children to create and visualise 3 or more equal groups.	

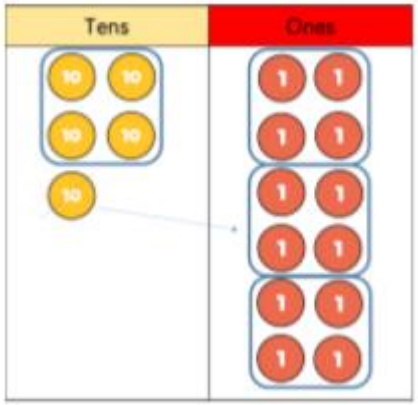
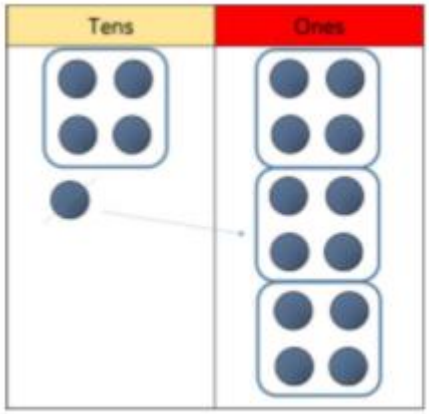
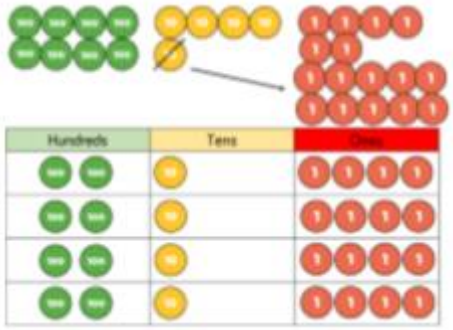
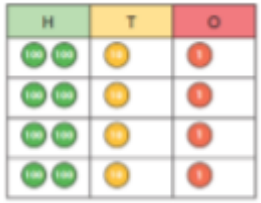
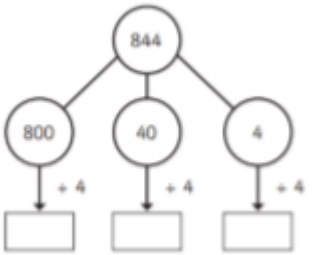
Year 1 – Division			
Objectives	Concrete	Pictorial	Abstract
Division as sharing (sharing objects into groups)	   I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities.  $8 \div 2 = 4$ Children use bar modelling to show and support understanding.  $12 \div 4 = 3$	They are not expected to record division.
Vocabulary	share, share equally, one each, two each…, group, groups of, lots of, array		

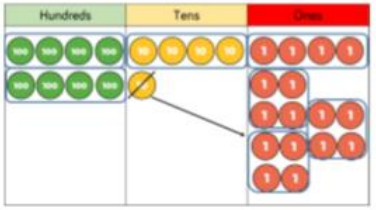
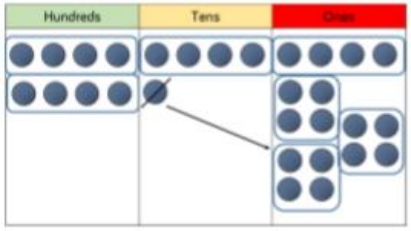
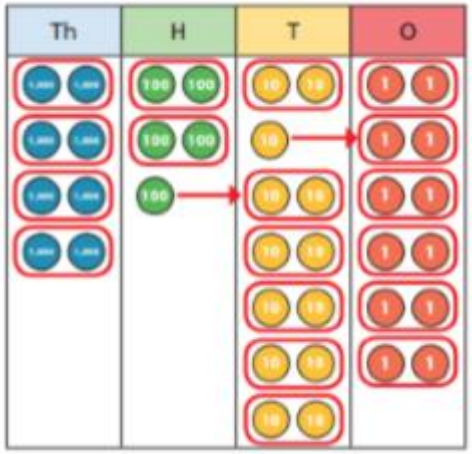
Year 2 – Division			
Objectives	Concrete	Pictorial	Abstract
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding. 	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  Think of the bar 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?**
Vocabulary	share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over		

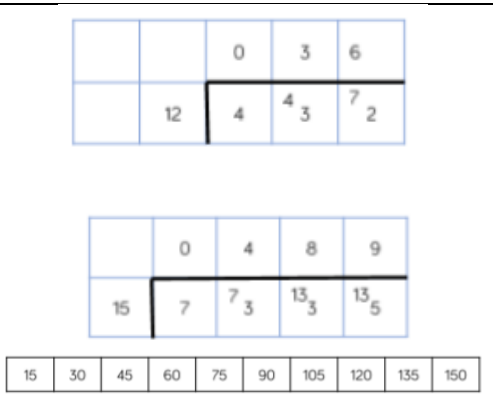
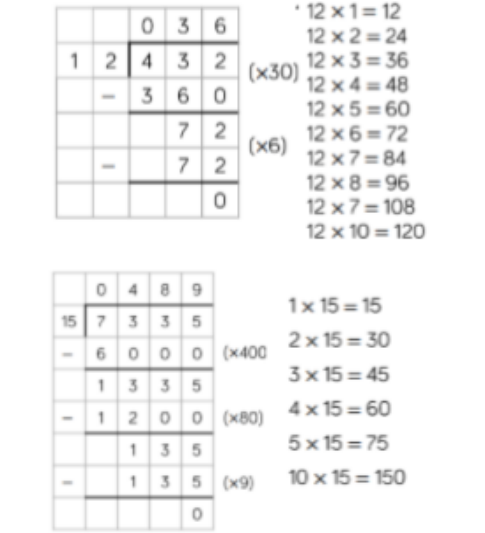
Year 3 – Division			
Objectives	Concrete	Pictorial	Abstract
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding.  24 divided into groups of 6 = 4 96 ÷ 3 = 32 	52  	How many groups of 6 in 24? 24 ÷ 6 = 4
Division with arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	Draw an array and use lines to split the array into groups to make multiplication and division sentences 	Find the inverse of multiplication and division sentences by creating eight linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7 28 = 7 x 4 28 = 4 x 7 4 = 28 ÷ 7 7 = 28 ÷ 4

Divide 2digit numbers by a 1digit number by partitioning into tens and ones using a pv grid	Eva uses a place value grid and part-whole model to solve 66÷ 3 		
Divide numbers that involve exchanging between the tens and ones. The answers do not have remainders.	Ron uses place value counters to divide 42 into three equal groups. 	Annie uses a similar method to divide 42 by 3  Children may use pictorial representation for the pv counters, alongside the part-whole model Children use their times-tables to partition the number into multiples of the divisor.	96 ÷ 8 96 ÷ 4 96 ÷ 3 96 ÷ 6

Division with a remainder		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. 	 $53 \div 4 = 13\ r1$
Vocabulary	share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, product		

Year 4 – Division			
Objectives	Concrete	Pictorial	Abstract
Divide 2 digits by 1 digit grouping			
Divide up to 3 digit numbers by 1 digit. Short Division			Begin with divisions that divide equally with no remainder  Children should be aware that a 0 is used to keep place value, if the number is not divisible.
Vocabulary	share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, product, division facts, inverse, derive		

Year 5– Division			
Objectives	Concrete	Pictorial	Abstract
Divide 3-digits by 1-digit			
Divide at least 4 digit numbers by 1 digit. Interpret remainders appropriately for the context Short Division			
Vocabulary	share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, product, division facts, inverse, derive, formal written method.		

Year 6 – Division			
Objectives	Concrete	Pictorial	Abstract
Divide multi digits by 2-digits (short division)			
Divide multi digits by 2-digits (long division)			
Vocabulary	share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, product, division facts, inverse, derive, formal written method.		