***Brooke Weston Trust* Calculation Policy, Lower KS2**

Using the Power Maths Calculation Policy as a base, BWT have developed a LKS2 maths policy that recognises the need for a concrete, pictorial and abstract approach to maths. It is aligned with the National Curriculum and ensures consistency in progression through the subject. We encourage teachers to use this document when planning for small steps through the curriculum and delivering practical and well-sequenced lessons in the classroom.

LOWER KEY STAGE 2

In Years 3 and 4, children develop the basis of written methods by building their skills alongside a deep understanding of place value. They should use known addition/subtraction and multiplication/division facts to calculate efficiently and accurately, rather than relying on counting. Children use place value equipment to support their understanding, but not as a substitute for thinking.

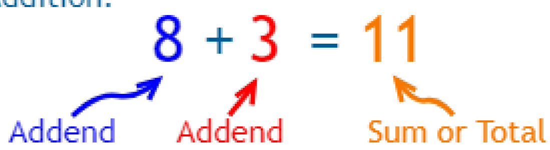
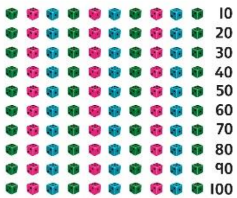
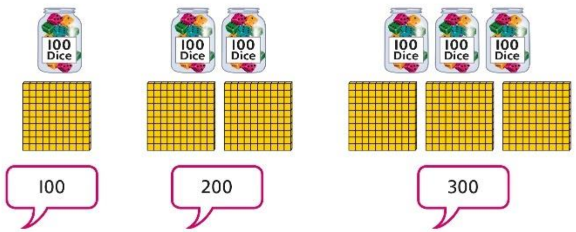
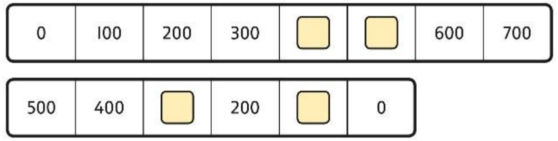
Key language: partition, place value, tens, hundreds, thousands, column method, whole, part, equal groups, sharing, grouping, bar model

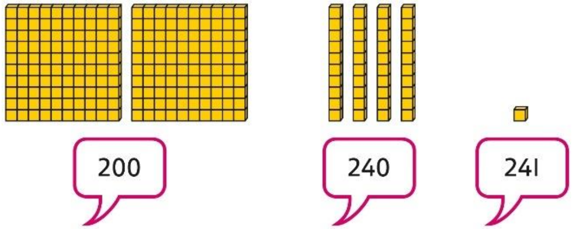
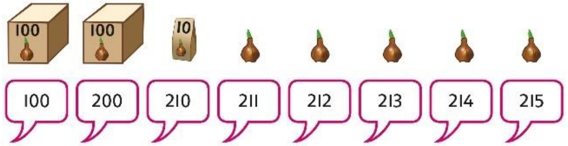
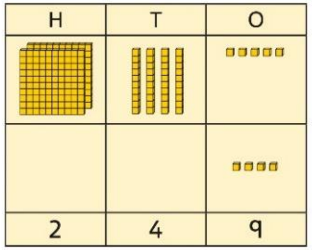
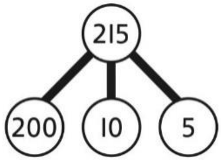
Addition and subtraction:
- Building up formal calculations that also include exchange.
- Building up the confidence in children to apply their 'number sense' to mental calculations e.g. compensation
- Children focus on choosing the most efficient method when comparing written and mental methods.
- By the end of Year 4, children should have developed fluency in column methods alongside a deep understanding, which will allow them to progress confidently in upper Key Stage 2.

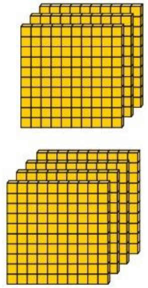
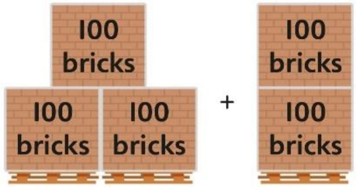
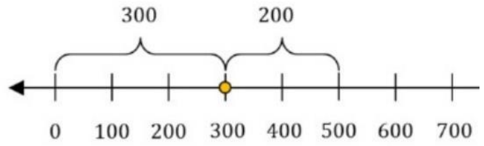
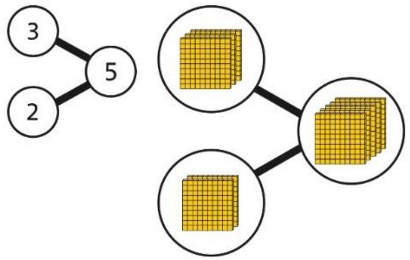
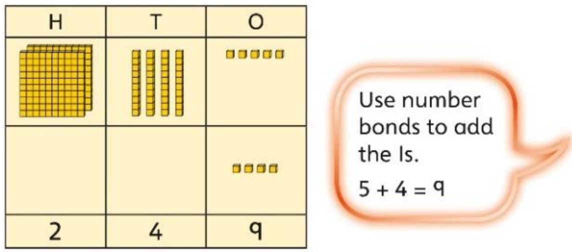
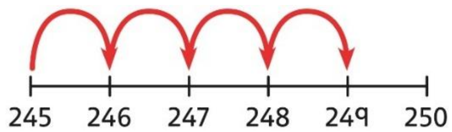
Multiplication and division:
- Children build a solid grounding in times-tables, understanding the multiplication and division facts in tandem.
- Children develop key skills to support multiplication methods: unitising and commutativity.
- Children develop column methods to support multiplications.
- Children will also need to understand the concept of remainder.

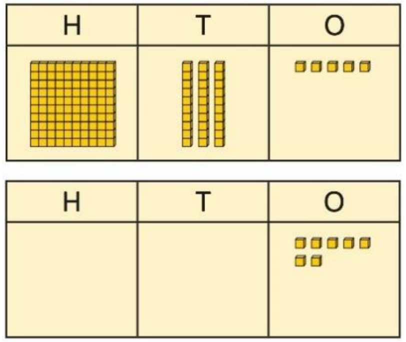
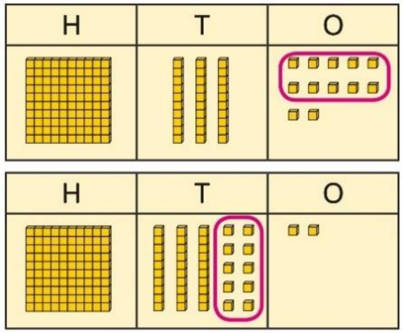
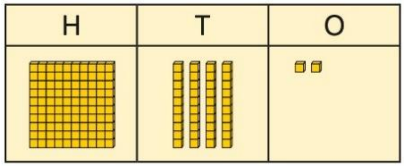
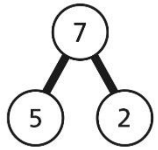
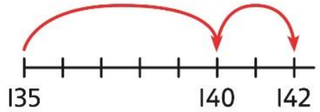
Children will develop short division methods to support their fluency of division calculations.

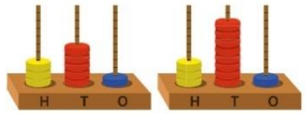
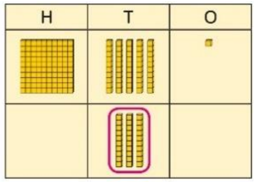
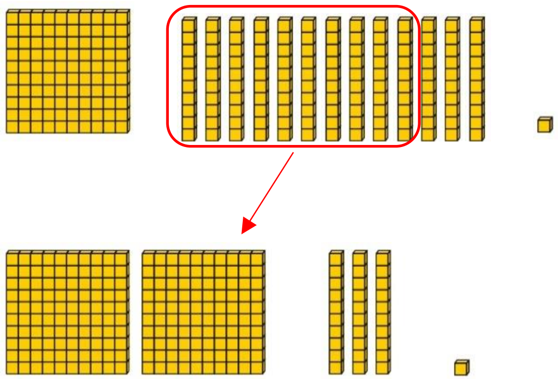
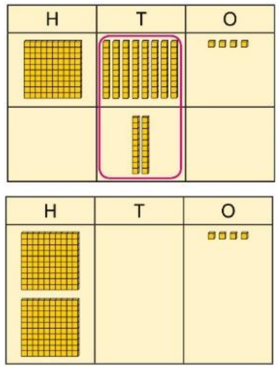
Year 3

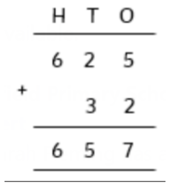
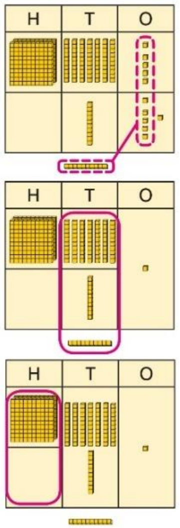
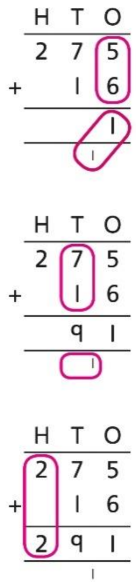
	Concrete	Pictorial	Abstract
Year 3 Addition	Addition: 		
Understanding 100s Cardinality = Knowing that the last object you count represents the number of objects within the group.	Understand the cardinality of 100, and the link with 10 tens. Use cubes to place into groups of 10 tens. 	Unitise 100 and count in steps of 100. 	Represent steps of 100 on a number line and a number track and count up to 1,000 and back to 0. 

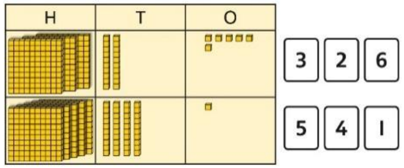
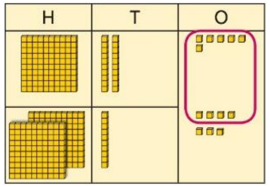
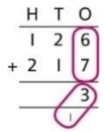
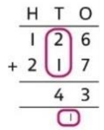
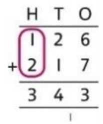
Unitise = Knowing that an object (e.g a cube) *can* represent a larger number.			
Understanding place value to 1,000	Use equipment to represent numbers to 1,000.  Place value counters are used alongside other equipment. Children should understand how each counter represents a different unitised amount. Body partitioning works well at this point too. The children apply an action to a 100, 10 or 1 and use this to represent a part of the number (e.g. jumping for 100s, hands above head for 10s and stomping for 1s).	Unitise 100s, 10s and 1s to build 3-digit numbers.  Use a place value grid to support the structure of numbers to 1,000.  	Represent the parts of numbers to 1,000 using a part-whole model.  *215 = 200 + 10 + 5* Recognise numbers to 1,000 represented on a number line, including those between intervals.
Adding 100s	Use known facts and unitising to add multiples of 100.	Use known facts and unitising to add multiples of 100.	Use known facts and unitising to add multiples of 100. Represent the addition on a number line.

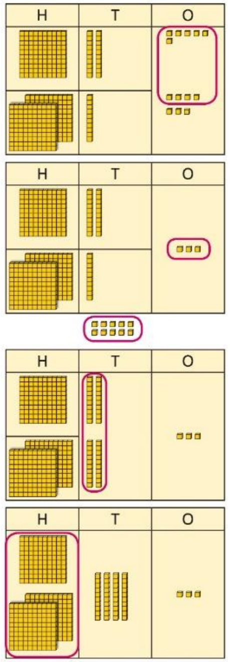
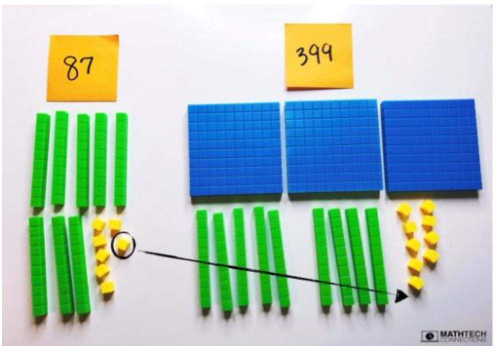
	 *3 + 4 = 7* *3 hundreds + 4 hundreds = 7 hundreds* *300 + 400 = 700*	 *3 + 2 = 5* *3 hundreds + 2 hundreds = 5 hundreds* *300 + 200 = 500*	 Use a part-whole model to support unitising.  *3 + 2 = 5* *300 + 200 = 500*
3-digit number + 1s, no exchange or bridging	Use number bonds to add the 1s.  *245 + 4* *5 + 4 = 9* *245 + 4 = 249* Use the dienes cubes in class to allow the children to manipulate the ones cubes.		Understand the link with counting on. *245 + 4*  Use number bonds to add the 1s and understand that this is more efficient and less prone to error. *245 + 4 = ?* *I will add the 1s.* *5 + 4 = 9* *So, 245 + 4 = 249*

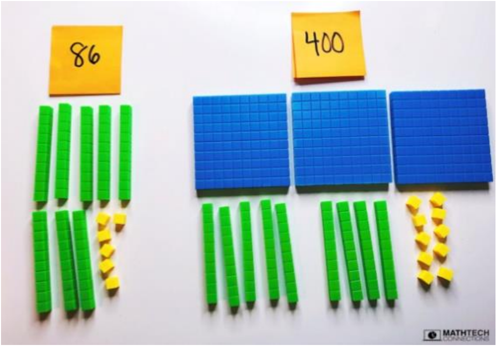
3-digit number + 1s with exchange	Understand that when the 1s sum to 10 or more, this requires an exchange of 10 ones for 1 ten. Children should explore this using unitised objects or physical apparatus. Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding.    *135 + 7 = 142*	Understand how to bridge by partitioning to the 1s to make the next 10.   *135 + 7 = ?* *135 + 5 + 2 = 142* Ensure that children understand how to add 1s bridging a 100. *198 + 5 = ?* *198 + 2 + 3 = 203*

3-digit number + 10s, no exchange	Calculate mentally by forming the number bond for the 10s.  *234 + 50* *There are 3 tens and 5 tens altogether.* *3 + 5 = 8* *In total there are 8 tens.* *234 + 50 = 284*	Calculate mentally by forming the number bond for the 10s. *351 + 30 = ?*  *5 tens + 3 tens = 8 tens* *351 + 30 = 381*	Calculate mentally by forming the number bond for the 10s. *753 + 40* *I know that 5 + 4 = 9* *So, 50 + 40 = 90* *753 + 40 = 793*
3-digit number + 10s, with exchange	Understand the exchange of 10 tens for 1 hundred. 	Add by exchanging 10 tens for 1 hundred. *184 + 20 = ?*  *184 + 20 = 204*	Understand how the addition relates to counting on in 10s across 100. *I can count in 10s … 194 … 204* *184 + 20 = 204* Use number bonds within 20 to support efficient mental calculations. *385 + 50* *There are 8 tens and 5 tens.* *That is 13 tens.* *385 + 50 = 300 + 130 + 5* *385 + 50 = 435*

3-digit number + 2-digit number	Use place value equipment to make and combine groups to model addition.  Use a place value grid to organise thinking and adding of 1s, then 10s.		Use the formal column method of addition to represent the equation. Children must understand how this relates to place value at each stage of the calculation. 
3-digit number + 2-digit number, exchange required	Use place value equipment to model addition and understand where exchange is required. *Use place value counters to represent 154 + 72.* *Use this to decide if any exchange is required.* *There are 5 tens and 7 tens. That is 12 tens so I will exchange.*	Represent the required exchange on a place value grid using equipment. *275 + 16 = ?*  *275 + 16 = 291* Note: In this example, a mental method may be more efficient. The numbers for the example calculation have been chosen to	Use a formal column method of addition with exchange. Children must understand how the method relates to place value at each stage of the calculation.  *275 + 16 = 291*

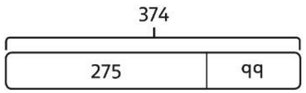
		allow children to visualise the concept and see how the method relates to place value. Children should be encouraged at every stage to select methods that are accurate and efficient.	
3-digit number + 3-digit number, no exchange	Use place value equipment to make a representation of a calculation. This may or may not be structured in a place value grid. *326 + 541 is represented as:*  Represent the place value grid with equipment to model the stages of column addition.		Use a column method to solve efficiently, using known bonds. Children must understand how this relates to place value at every stage of the calculation.
3-digit number + 3-digit number, exchange required	Use place value equipment to enact the exchange required.  *There are 13 ones.* *I will exchange 10 ones for 1 ten.*	Model the stages of column addition using place value equipment on a place value grid.	Use column addition, ensuring understanding of place value at every stage of the calculation.   

			*126 + 217 = 343* Note: Children should also study examples where exchange is required in more than one column, for example *185 + 318 = ?*
Compensation Compensation = knowing that numbers that are close to boundaries can move from one addend to the other addend to simplify the equation.	Children need to understand commutativity (see Y2 addition) before they access compensation. 		17 + 29 17 (-1) + 29 (+1) 16 + 30 = 46

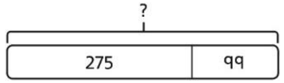
<table>
<tr><td></td><td colspan="2">
</td><td></td></tr>
<tr><td>Representing addition problems, and selecting appropriate methods</td>
<td>Encourage children to use their own drawings and choices of place value equipment to represent problems with one or more steps.

These representations will help them to select appropriate methods.</td>
<td>Children understand and create bar models to represent addition problems.

275 + 99 = ?

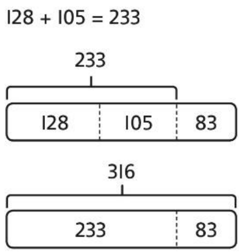


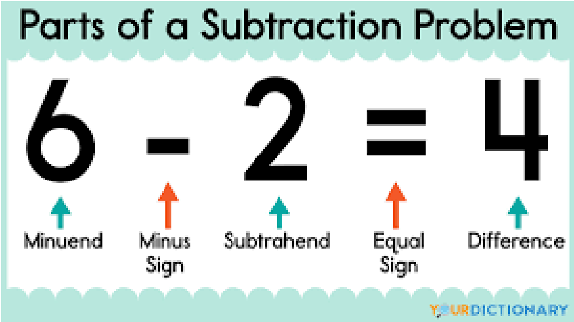
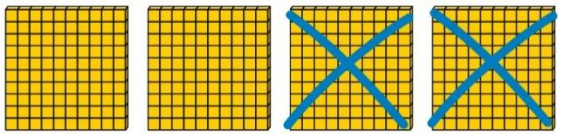
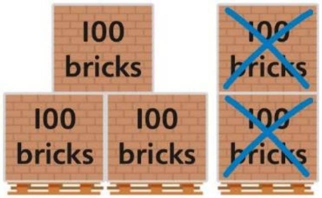
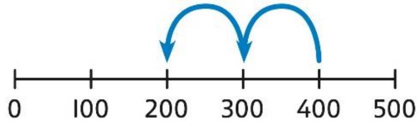
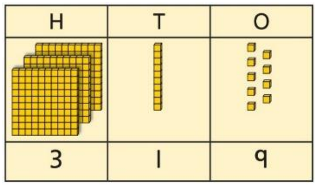
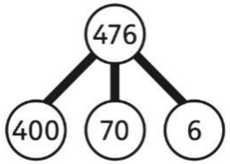
275 + 99 = 374</td>
<td>Use representations to support choices of appropriate methods.

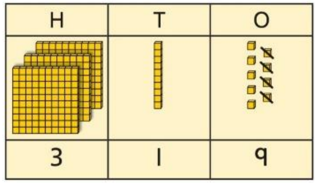
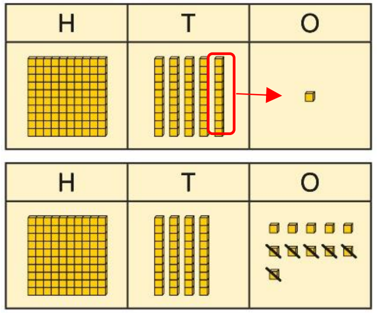
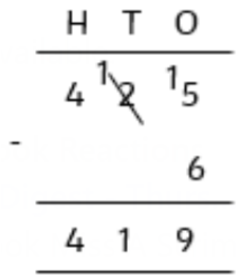
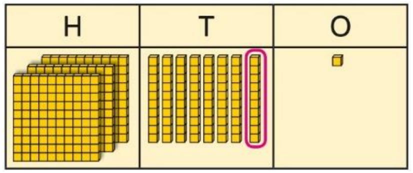


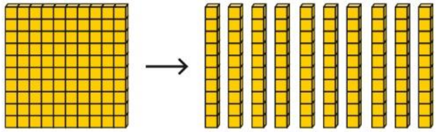
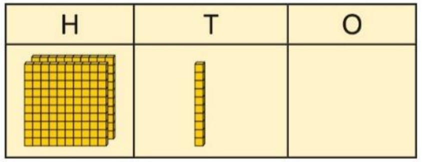
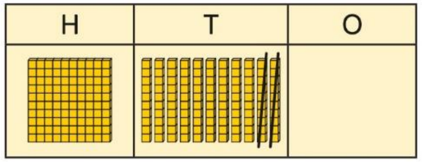
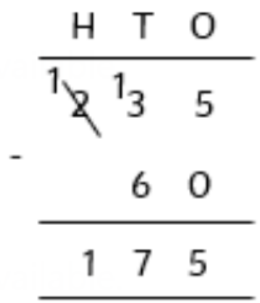
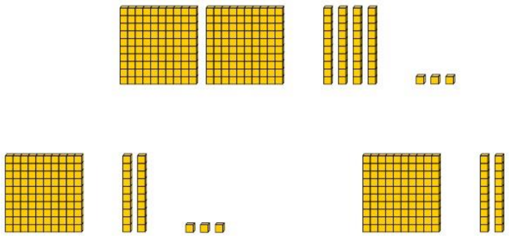
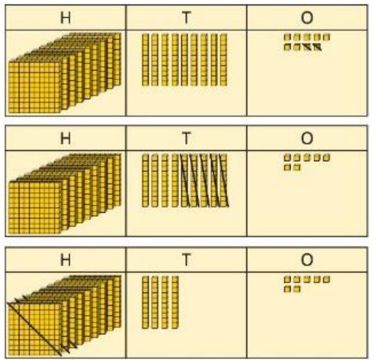
I will add 100, then subtract 1 to find the solution.

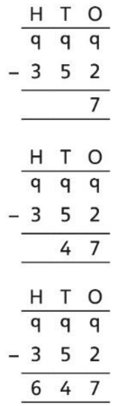
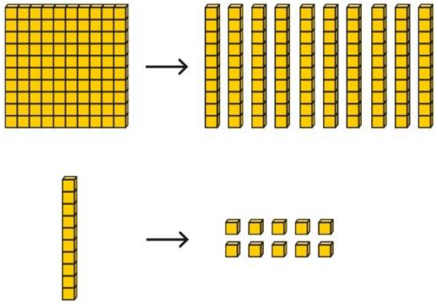
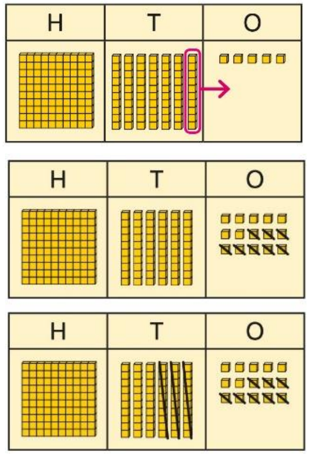
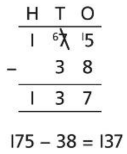
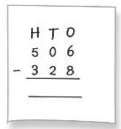
128 + 105 + 83 = ?
I need to add three numbers.

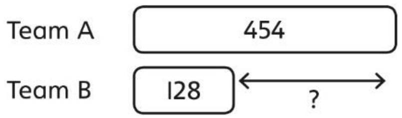
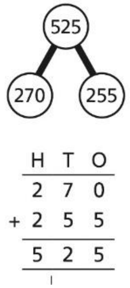
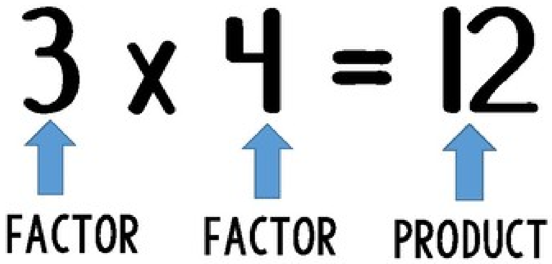

</td></tr>
</table>

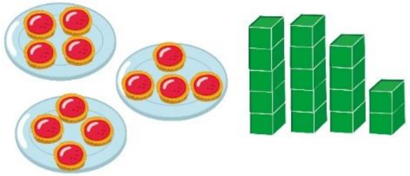
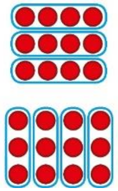
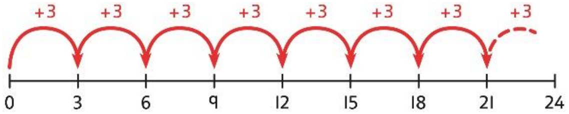
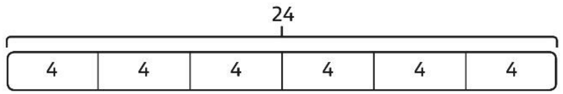
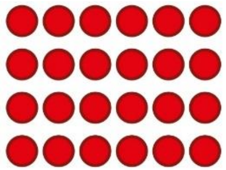
Year 3 Subtraction			
Subtracting 100s	Use known facts and unitising to subtract multiples of 100.  *4 − 2 = 2* *400 − 200 = 200*	Use known facts and unitising to subtract multiples of 100.  *5 − 2 = 3* *500 − 200 = 300*	Understand the link with counting back in 100s.  *400 − 200 = 200* Use known facts and unitising as efficient and accurate methods. *I know that 7 − 4 = 3. Therefore, I know that 700 − 400 = 300.*
3-digit number − 1s, no exchange	Use number bonds to subtract the 1s.  *319 − 4 = ?*		Understand the link with counting back using a number line. Use known number bonds to calculate mentally. *476 − 4 = ?* 

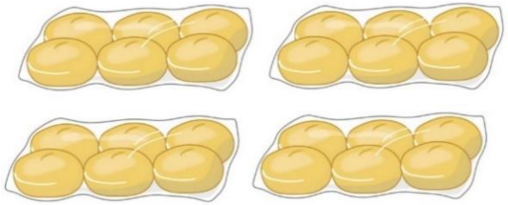
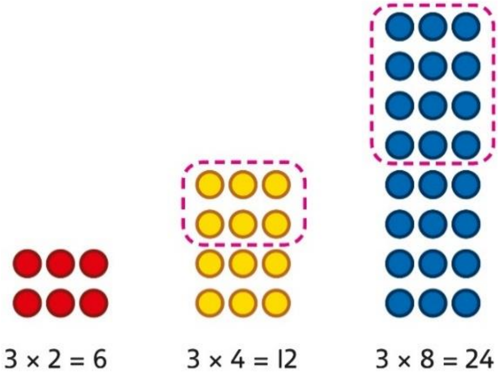
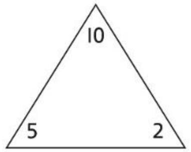
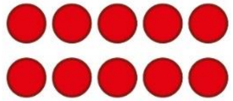
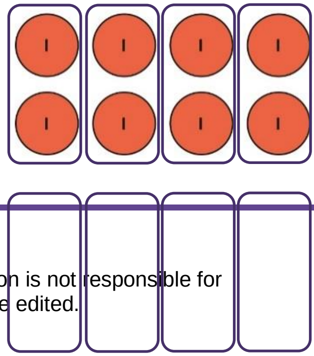
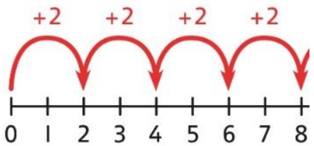
	 *9 − 4 = 5* *319 − 4 = 315*	*6 − 4 = 2* *476 − 4 = 472* Use column subtraction to calculate.
3-digit number − 1s, exchange or bridging required	Understand why an exchange is necessary by exploring why 1 ten must be exchanged. Use place value equipment. Represent the required exchange on a place value grid. *151 − 6 = ?* 	*Use column subtraction to calculate* 
3-digit number − 10s, no exchange	Subtract the 10s using known bonds.  *8 tens − 1 ten = 7 tens* *381 − 10 = 371*	Use known bonds to subtract the 10s mentally. *372 − 50 = ?* *70 − 50 = 20* *So, 372 − 50 = 322*

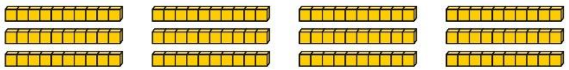
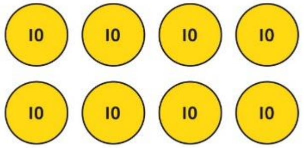
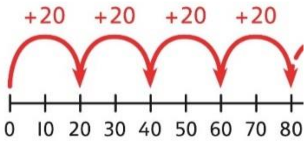
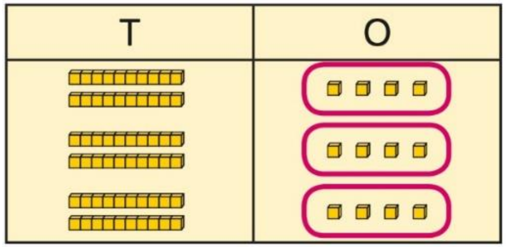
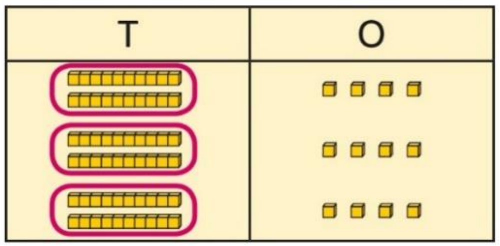
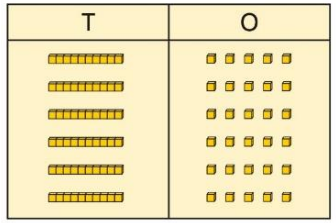
			Model this using the column method for subtraction.
3-digit number − 10s, exchange or bridging required	Use equipment to understand the exchange of 1 hundred for 10 tens. 	Represent the exchange on a place value grid using equipment. *210 − 20 = ?*  *I need to exchange 1 hundred for 10 tens, to help subtract 2 tens.*  *210 − 20 = 190*	
3-digit number − up to 3-digit number	Use place value equipment to explore the effect of splitting a whole into two parts, and understand the link with taking away. 	Represent the calculation on a place value grid. 	Use column subtraction to calculate accurately and efficiently.

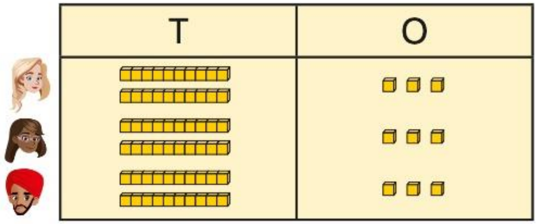
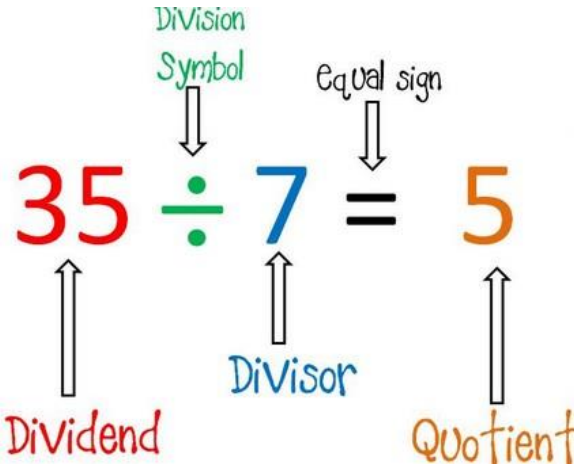
			
3-digit number − up to 3-digit number, exchange required	Use equipment to enact the exchange of 1 hundred for 10 tens, and 1 ten for 10 ones. 	*Model the required exchange on a place value grid.* *175 − 38 = ?* *I need to subtract 8 ones, so I will exchange a ten for 10 ones.* 	Use column subtraction to work accurately and efficiently.  If the subtraction is a 3-digit number subtract a 2-digit number, children should understand how the recording relates to the place value, and so how to line up the digits correctly. Children should also understand how to exchange in calculations where there is a zero in the 10s column. 
Representing subtraction problems		Use bar models to represent subtractions. ‘Find the difference’ is represented as two bars for comparison.	Children use alternative representations to check calculations and choose efficient methods.

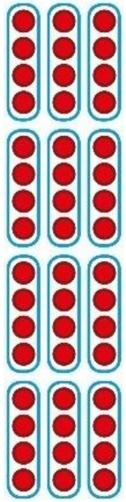
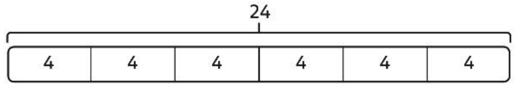
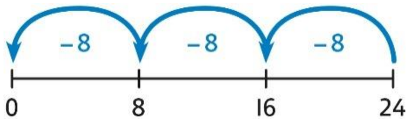
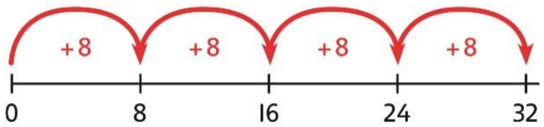
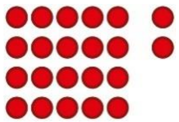
		 Bar models can also be used to show that a part must be taken away from the whole.	Children use inverse operations to check additions and subtractions. The part-whole model supports understanding. *I have completed this subtraction.* *525 − 270 = 255* *I will check using addition.* 
Year 3 Multiplication	It is important that by the end of this stage in Year 3, that children recognise and can identify that multiplication is commutative: They can swap either factor around and the product will remain the same. 		

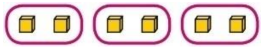
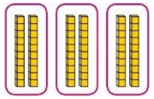
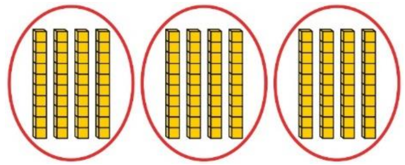
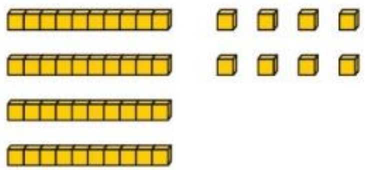
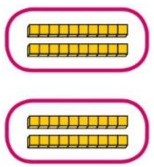
Understanding equal grouping and repeated addition	Children continue to build understanding of equal groups and the relationship with repeated addition. They recognise both examples and non-examples using objects.  Children recognise that arrays can be used to model commutative multiplications.  *I can see 3 groups of 8.* *I can see 8 groups of 3.*	Children recognise that arrays demonstrate commutativity.  *This is 3 groups of 4.* *This is 4 groups of 3.*	Children understand the link between repeated addition and multiplication.  *8 groups of 3 is 24.* *3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24* *8 × 3 = 24* A bar model may represent multiplications as equal groups.  *6 × 4 = 24*
Using commutativity to support understanding of the times-tables	Understand how to use times-tables facts flexibly. 	Understand how times-table facts relate to commutativity.  *6 × 4 = 24* *4 × 6 = 24*	Understand how times-table facts relate to commutativity. *I need to work out 4 groups of 7.* *I know that 7 × 4 = 28* *so, I know that* *4 groups of 7 = 28* *and* *7 groups of 4 = 28.*

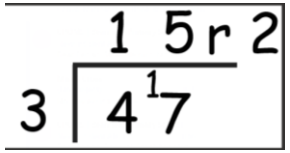
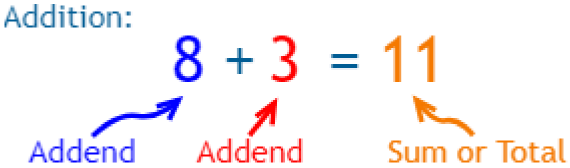
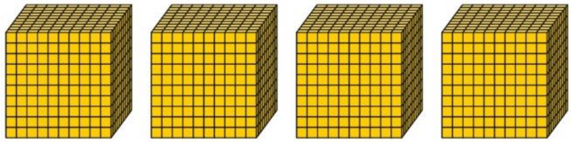
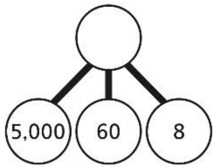
	 *There are 6 groups of 4 pens.* *There are 4 groups of 6 bread rolls.* *I can use 6 × 4 = 24 to work out both totals.*		
Understanding and using ×3, ×2, ×4 and ×8 tables.	Children learn the times-tables as 'groups of', but apply their knowledge of commutativity.  *I can use the ×3 table to work out how many keys.* *I can also use the ×3 table to work out how many batteries.*	Children understand how the ×2, ×4 and ×8 tables are related through repeated doubling. 	Children understand the relationship between related multiplication and division facts in known times-tables.  *2 × 5 = 10* *5 × 2 = 10* *10 ÷ 5 = 2* *10 ÷ 2 = 5*
Using known facts to multiply 10s, for example 3 × 40	Explore the relationship between known times-tables and multiples of 10 using place value equipment. *Make 4 groups of 3 ones.* 	Understand how unitising 10s supports multiplying by multiples of 10. 	Understand how to use known times-tables to multiply multiples of 10. 

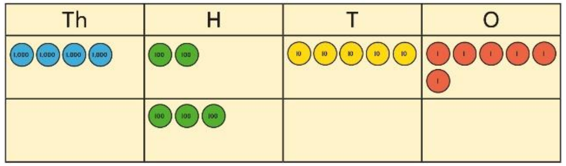
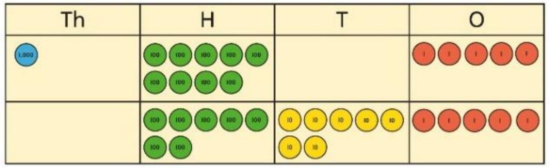
	Make 4 groups of 3 tens.  *What is the same?* *What is different?*	 *4 groups of 2 ones is 8 ones.* *4 groups of 2 tens is 8 tens.* *4 × 2 = 8* *4 × 20 = 80*	 *4 × 2 = 8* *4 × 20 = 80*
Multiplying a 2-digit number by a 1-digit number, expanded column method	Understand how to link partitioning a 2-digit number with multiplying. *Each person has 23 flowers.* *Each person has 2 tens and 3 ones.*  *There are 3 groups of 2 tens.* *There are 3 groups of 3 ones.* Use place value equipment to model the multiplication context.	Use place value to support how partitioning is linked with multiplying by a 2-digit number. *3 × 24 = ?*  *3 × 4 = 12*  *3 × 20 = 60*	Children may write calculations in expanded column form, but must understand the link with place value and exchange. Children are encouraged to write the expanded parts of the calculation separately.  T O 1 5 × 6 + 6 × 5 6 × 10 *5 × 28 = ?* T O 2 8 × 5 4 0 5 × 8 1 0 0 5 × 20 1 4 0

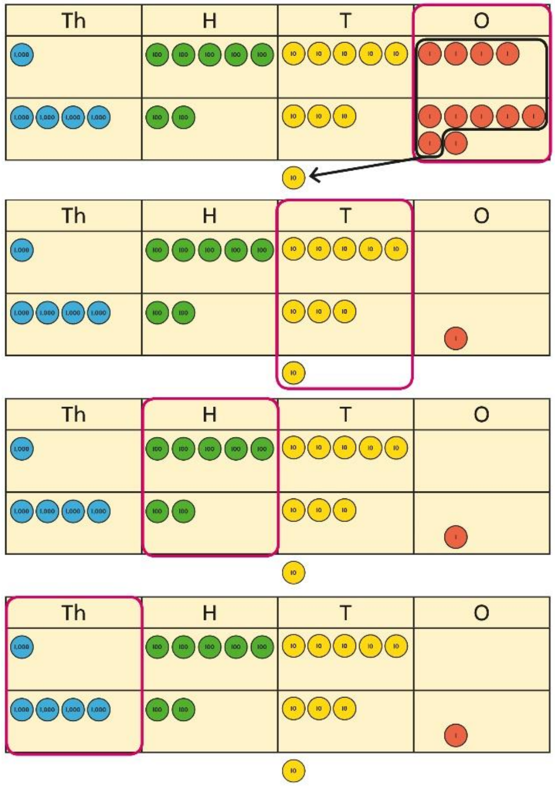
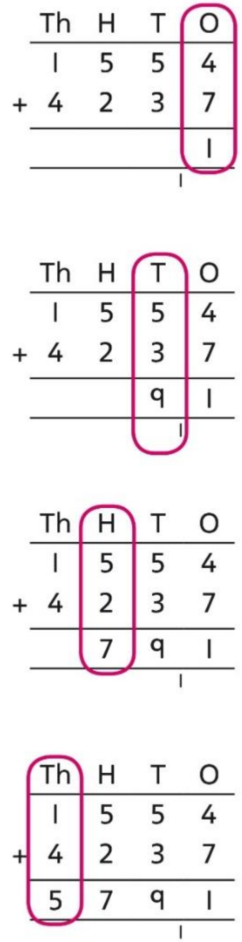
	 *There are 3 groups of 3 ones.* *There are 3 groups of 2 tens.*	*60 + 12 = 72* *3 × 24 = 72*	
Year 3 Division			
Using times-tables knowledge to divide	Use knowledge of known times-tables to calculate divisions.  *24 divided into groups of 8.* *There are 3 groups of 8.*	Use knowledge of known times-tables to calculate divisions.	Use knowledge of known times-tables to calculate divisions. *I need to work out 24 shared between 6.* *I know that 6 × 4 = 24* *so I know that 24 ÷ 6 = 4.*

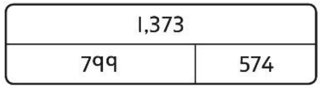
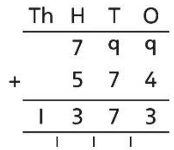
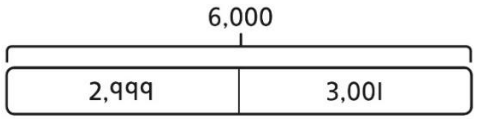
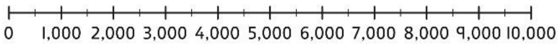
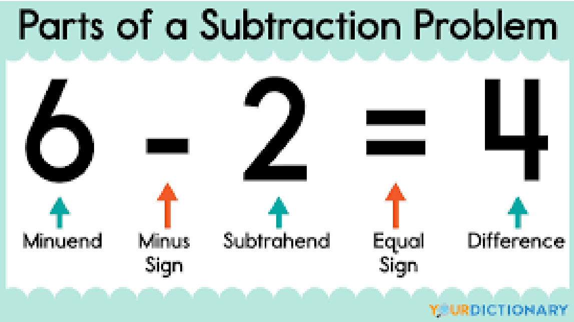
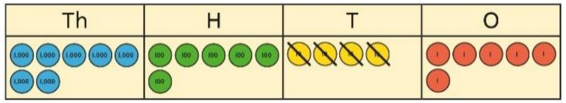
		 48 ÷ 4 = 12 *48 divided into groups of 4.* *There are 12 groups.* *4 × 12 = 48* *48 ÷ 4 = 12*	A bar model may represent the relationship between sharing and grouping.  *24 ÷ 4 = 6* *24 ÷ 6 = 4* Children understand how division is related to both repeated subtraction and repeated addition.  *24 ÷ 8 = 3*  *32 ÷ 8 = 4*
Understanding remainders	Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further.  *There are 13 sticks in total.*  *There are 3 groups of 4, with 1 remainder.*	Use images to explain remainders.  *22 ÷ 5 = 4 remainder 2*	Understand that the remainder is what cannot be shared equally from a set. *22 ÷ 5 = ?* *3 × 5 = 15* *4 × 5 = 20* *5 × 5 = 25 … this is larger than 22* *So, 22 ÷ 5 = 4 remainder 2*

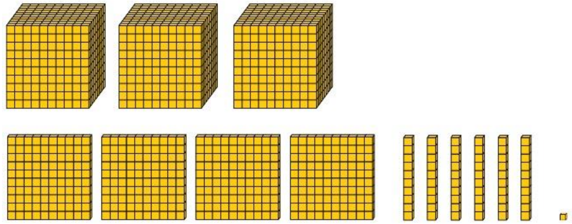
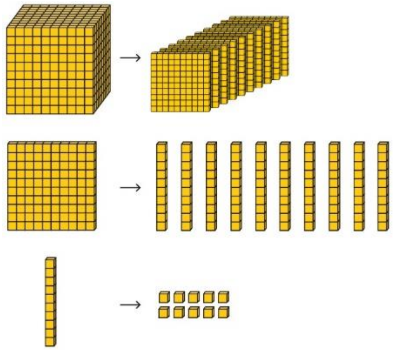
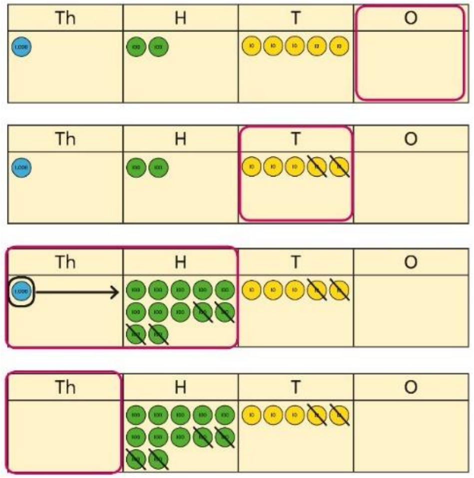
Using known facts to divide multiples of 10	Use place value equipment to understand how to divide by unitising. *Make 6 ones divided by 3.*  *Now make 6 tens divided by 3.*  *What is the same? What is different?*	Divide multiples of 10 by unitising.  *12 tens shared into 3 equal groups.* *4 tens in each group.*	Divide multiples of 10 by a single digit using known times-tables. *180 ÷ 3 = ?* Explain how pattern finding or using known facts can help when solving these types of division equations. *18 ÷ 3 = 6* *180 ÷ 3 = 60*
2-digit number divided by 1-digit number, no remainders	Children explore dividing 2-digit numbers by using place value equipment.  *48 ÷ 2 = ?* *First divide the 10s.*  *Then divide the 1s.* 		Children link their practical work to the bus stop method: $\begin{array}{r} 1\ 4 \\ 4\overline{\smash{)}5\ {}^{1}6} \end{array}$

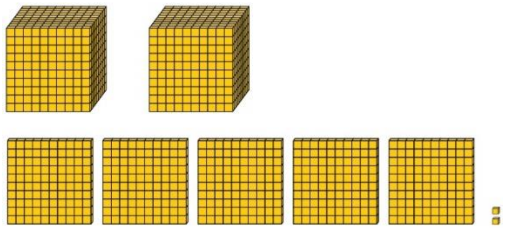
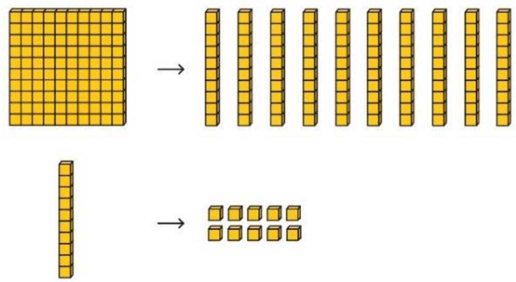
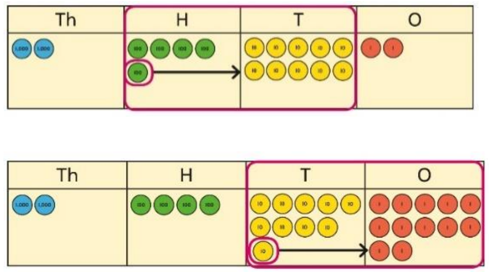
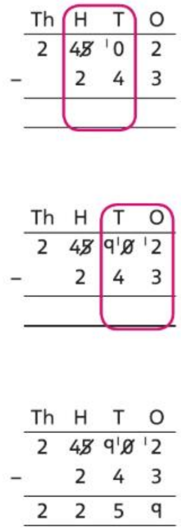
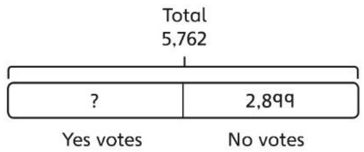
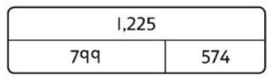
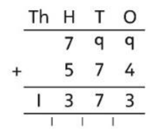
2-digit number divided by 1-digit number, with remainders	Use place value equipment to understand the concept of remainder in division. *29 ÷ 2 = ?*  *29 ÷ 2 = 14 remainder 1* Link this back to equal grouping as has been mentioned previously Y3 division.		Children link their practical work to the bus stop method: 
Year 4			
	Concrete	**Pictorial**	**Abstract**
Year 4 Addition	 		
Understanding numbers to 10,000	Use place value equipment to understand the place value of 4-digit numbers.  *4 thousands equal 4,000.* *1 thousand is 10 hundreds.* Body partitioning works well at this point too. The children apply an action to a 1,000, 100, 10 or 1 and use this to represent a part of the number (e.g. jumping for 100s, hands above head for 10s and stomping for 1s).	Represent numbers using place value counters once children understand the relationship between 1,000s and 100s.  *2,000 + 500 + 40 + 2 = 2,542*	Understand partitioning of 4-digit numbers, including numbers with digits of 0.  *5,000 + 60 + 8 = 5,068*

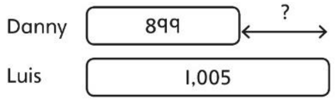
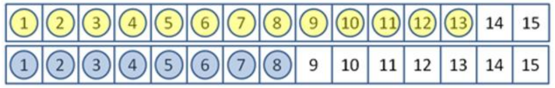
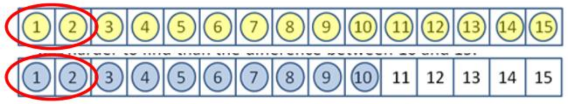
Choosing mental methods where appropriate	Use unitising and known facts to support mental calculations. *Make 1,405 from place value equipment.* *Add 2,000.* *Now add the 1,000s.* *1 thousand + 2 thousands = 3 thousands* *1,405 + 2,000 = 3,405* *Ask, 'What do you notice?'* Children to use dienes cubes to support their answer. Revisit with multiple different examples	Use unitising and known facts to support mental calculations.  *I can add the 100s mentally.* *200 + 300 = 500* *So, 4,256 + 300 = 4,556* *Revisit with multiple different examples*	Use unitising and known facts to support mental calculations. *4,256 + 300 = ?* *2 + 3 = 5* *200 + 300 = 500* *4,256 + 300 = 4,556* *When exploring the abstract, use colour coding to make explicit the digit that is being manipulated.*
Column addition with exchange	Use place value equipment on a place value grid to organise thinking. Ensure that children understand how the columns relate to place value and what to do if the numbers are not all 4-digit numbers. *Use equipment.to show 1,905 + 775.*  *Why have only three columns been used for the second row? Why is the Thousands box empty?*	Use place value equipment to model required exchanges.	Use a column method to add, including exchanges.

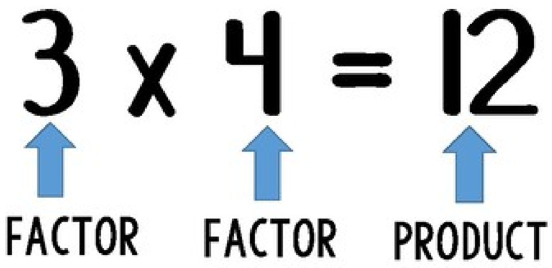
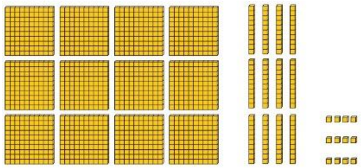
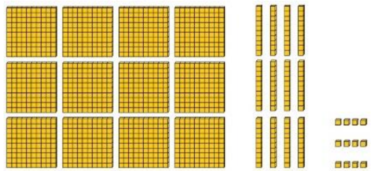
	Which columns will total 10 or more?	 Include examples that exchange in more than one column. Ensure that this is modelled underneath a visualiser.	 Include examples that exchange in more than one column. Ensure that this is modelled underneath a visualiser.

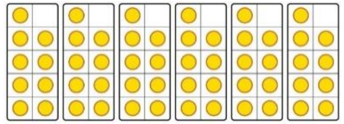
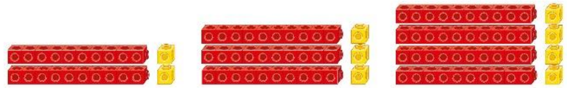
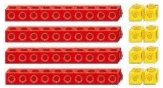
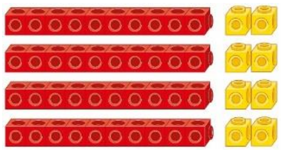
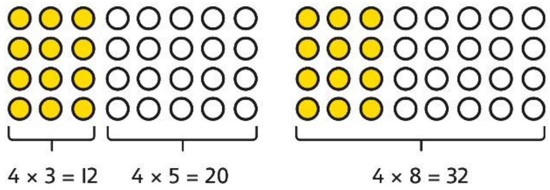
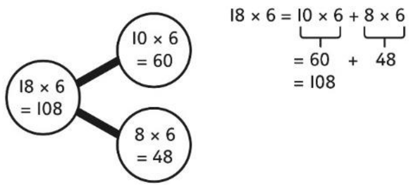
Representing additions and checking strategies		Bar models may be used to represent additions in problem contexts, and to justify mental methods where appropriate.   *I chose to work out 574 + 800, then subtract 1.*  *This is equivalent to 3,000 + 3,000.*	Use rounding and estimating on a number line to check the reasonableness of an addition.  *912 + 6,149 = ?* *I used rounding to work out that the answer should be approximately 1,000 + 6,000 = 7,000.*
Year 4 Subtraction	 		
Choosing mental methods where appropriate	Use place value equipment to justify mental methods.	Use place value grids to support mental methods where appropriate.  *7,646 − 40 = 7,606*	Use knowledge of place value and unitising to subtract mentally where appropriate. *3,501 − 2,000* *3 thousands − 2 thousands = 1 thousand* *3,501 − 2,000 = 1,501*

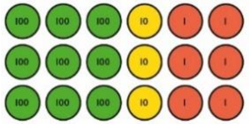
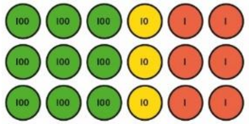
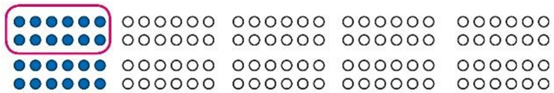
	 *What number will be left if we take away 300?*		*When exploring the abstract, use colour coding to make explicit the digit that is being manipulated.*
Column subtraction with exchange	Understand why exchange of a 1,000 for 100s, a 100 for 10s, or a 10 for 1s may be necessary. 	Represent place value equipment on a place value grid to subtract, including exchanges where needed. 1250 – 420 = ? 	Use column subtraction, with understanding of the place value of any exchange required. Th H T O 1 2 5 0 – 4 2 0 0 Th H T O 1 2 5 0 – 4 2 0 3 0 Th H T O ~~1~~ ¹2 5 0 – 4 2 0 8 3 0 Th H T O ~~1~~ ¹2 5 0 – 4 2 0 8 3 0

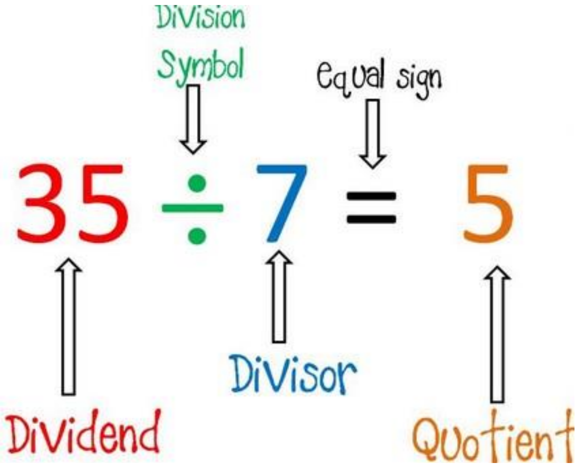
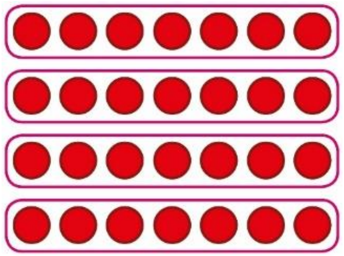
Column subtraction with exchange across more than one column	Understand why two exchanges may be necessary. *2,502 − 243 = ?*  *I need to exchange a 10 for some 1s, but there are not any 10s here.* 	Make exchanges across more than one column where there is a zero as a place holder. *2,502 − 243 = ?* 	Make exchanges across more than one column where there is a zero as a place holder. *2,502 − 243 = ?* 
Representing subtractions and checking strategies		Use bar models to represent subtractions where a part needs to be calculated.  *I can work out the total number of Yes votes using 5,762 − 2,899.* Bar models can also represent 'find the difference' as a subtraction problem.	Use inverse operations to check subtractions. *I calculated 1,225 − 799 = 574.* *I will check by adding the parts.*  *The parts do not add to make 1,225.* *I must have made a mistake.*

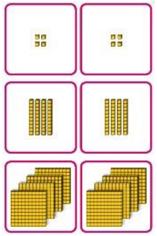
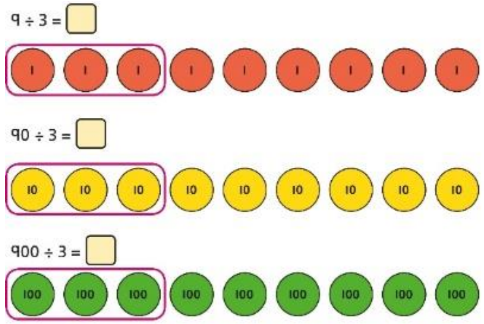
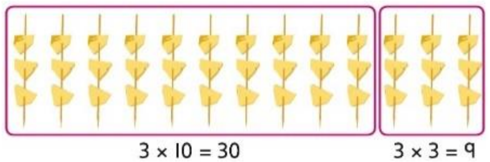
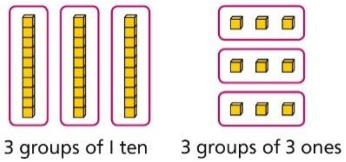
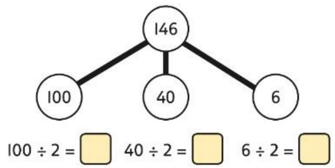
			
Use a 'Same Difference' mental strategy	Children explore with multilink cubes how you can add on (or subtract) the same amount from the minuend and subtrahend and the difference will remain the same. For example, 13 – 8 = 5  Can be simplified by adding 2 onto the minuend and subtrahend. The difference between the numbers will remain the same. 15 – 10 = 5  Discuss with the children why the second option is easier to calculate and explore alternatives.	Use pictorial representations of the numbers to explore this further. Ensure the children are clear about which numbers have been added on to the minuend and subtrahend.  	13 – 8 = ? (13 +2) - (8 + 2) = ? 15 – 10 = 5 Therefore, 13 – 8 = 5 as the difference is the same.

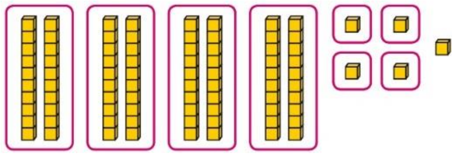
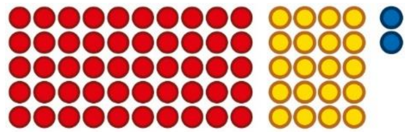
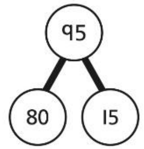
Year 4 Multiplication **Please see attached appendix for MTC guidance and support in strategy. This policy will only look at developing confidence with the formal calculations. Appendix to include: Times tables guidance; example lesson slides and flashcards**			
Multiplying by multiples of 10 and 100	Use unitising and place value equipment to understand how to multiply by multiples of 1, 10 and 100.  *3 groups of 4 ones is 12 ones.* *3 groups of 4 tens is 12 tens.* *3 groups of 4 hundreds is 12 hundreds.*	Use unitising and place value equipment to understand how to multiply by multiples of 1, 10 and 100.  $3 \times 4 = 12$ $3 \times 40 = 120$ $3 \times 400 = 1,200$	Use known facts and understanding of place value and commutativity to multiply mentally. $4 \times 7 = 28$ $4 \times 70 = 280$ $40 \times 7 = 280$ $4 \times 700 = 2,800$ $400 \times 7 = 2,800$
Understanding times-tables up to 12 × 12	Understand the special cases of multiplying by 1 and 0.	Represent the relationship between the ×9 table and the ×10 table.	Understand how times-tables relate to counting patterns.

This is to be used alongside the times table appendices.	  *5 × 1 = 5* *5 × 0 = 0*	 Represent the ×11 table and ×12 tables in relation to the ×10 table.  *2 × 11 = 20 + 2* *3 × 11 = 30 + 3* *4 × 11 = 40 + 4*  *4 × 12 = 40 + 8*	Understand links between the ×3 table, ×6 table and ×9 table *5 × 6 is double 5 × 3* ×5 table and ×6 table *I know that 7 × 5 = 35* *so I know that 7 × 6 = 35 + 7.* ×5 table and ×7 table *3 × 7 = 3 × 5 + 3 × 2* ×9 table and ×10 table *6 × 10 = 60* *6 × 9 = 60 − 6*
Understanding and using partitioning in multiplication	Make multiplications by partitioning. *4 × 12 is 4 groups of 10 and 4 groups of 2.*  *4 × 12 = 40 + 8*	Understand how multiplication and partitioning are related through addition. 4 x 8 =  *4 × 3 = 12* *4 × 5 = 20* *12 + 20 = 32* *4 × 8 = 32*	Use partitioning to multiply 2-digit numbers by a single digit. *18 × 6 = ?*  *18 × 6 = (10 × 6) + (8 × 6)* *= 60 + 48* *= 108*

Column multiplication for 2- and 3-digit numbers multiplied by a single digit	Use place value equipment to make multiplications. *Make 3 × 312 using equipment.*  *I can work out how many 1s, 10s and 100s.* *There are 3 × 2 ones… 6 ones* *There are 3 × 1 ten … 3 tens* *There are 3 × 3 hundreds … 9 hundreds* *6 + 30 + 900 = 936*	Use place value equipment alongside a column method for multiplication of up to 3-digit numbers by a single digit.  $\begin{array}{r} 312 \\ \times \quad 3 \\ \hline 936 \\ \hline \end{array}$	Use the formal column method for up to 3-digit numbers multiplied by a single digit. $\begin{array}{r} 312 \\ \times \quad 3 \\ \hline 936 \\ \hline \end{array}$ Understand how the expanded column method is related to the formal column method and understand how any exchanges are related to place value at each stage of the calculation. $\begin{array}{r} 23 \\ \times \quad 5 \\ \hline 15 \\ 100 \\ \hline 115 \\ \hline \end{array}$ $\begin{array}{r} 23 \\ \times \quad 5 \\ \hline 115 \\ \hline {\scriptstyle 1} \end{array}$
Multiplying more than two numbers **Associative Law (commutativity)= Explain to the children that when you multiply more than 2 factors together, the order you multiply them in does not matter.**	Represent situations by multiplying three numbers together.  *Each sheet has 2 × 5 stickers.* *There are 3 sheets.* *There are 5 × 2 × 3 stickers in total.* $\underbrace{5 \times 2} \times 3 = 30$ $10 \times 3 = 30$	Understand that the associative law/commutativity can be used to multiply in different orders.  *2 × 6 × 10 = 120* *12 × 10 = 120* *10 × 6 × 2 = 120* *60 × 2 = 120*	

	Using the 'Associative Law', explain that the children can decide which order they multiply the factors in. If they preferred to do 5 x 3 = 15 15 x 2 = 30 This would be acceptable.		
Year 4 Division	 		
Understanding the relationship between multiplication and division, including times-tables	Use objects to explore families of multiplication and division facts.  *4 × 6 = 24* *24 is 6 groups of 4.* *24 is 4 groups of 6.* *24 divided by 6 is 4.* *24 divided by 4 is 6.*	Represent divisions using an array.  28 ÷ 7 = 4	Understand families of related multiplication and division facts. *I know that 5 × 7 = 35* *so I know all these facts:* *5 × 7 = 35* *7 × 5 = 35* *35 = 5 × 7* *35 = 7 × 5* *35 ÷ 5 = 7* *35 ÷ 7 = 5* *7 = 35 ÷ 5* *5 = 35 ÷ 7*

Dividing multiples of 10 and 100 by a single digit	Use place value equipment to understand how to use unitising to divide.  *8 ones divided into 2 equal groups* *4 ones in each group* *8* ÷ 2 = 4 *8 tens divided into 2 equal groups* *4 tens in each group* *80* ÷ 2 = 40 *8 hundreds divided into 2 equal groups* *4 hundreds in each group* *800* ÷ 2 = 400	Represent divisions using place value equipment.  *9 ÷ 3 = 3* *9 tens divided by 3 is 3 tens.* *9 hundreds divided by 3 is 3 hundreds.*	Use known facts to divide 10s and 100s by a single digit. *15 ÷ 3 = 5* *150 ÷ 3 = 50* *1500 ÷ 3 = 500*
Dividing 2-digit and 3-digit numbers by a single digit by partitioning into 100s, 10s and 1s	Partition into 10s and 1s to divide where appropriate. *39 ÷ 3 = ?*  *39 = 30 + 9* *30 ÷ 3 = 10*	Partition into 100s, 10s and 1s using Base 10 equipment to divide where appropriate. *39 ÷ 3 = ?*  *39 = 30 + 9* *30 ÷ 3 = 10*	Partition into 100s, 10s and 1s using a part-whole model to divide where appropriate. *146 ÷ 2 = ?*  *100 ÷ 2 = 50* *40 ÷ 2 = 20* *6 ÷ 2 = 3*

	9 ÷ 3 = 3 *39 ÷ 3 = 13*	*9 ÷ 3 = 3* *39 ÷ 3 = 13*	*50 + 20 + 3 = 73* *146 ÷ 2 = 73*
Dividing 2-digit and 3-digit numbers by a single digit, using bus stop method			
Understanding remainders	Use place value equipment to find remainders. *85 shared into 4 equal groups* *There are 24, and 1 that cannot be shared.* 	Represent the remainder as the part that cannot be shared equally.  *72 ÷ 5 = 14 remainder 2*	Understand how partitioning can reveal remainders of divisions.  *80 ÷ 4 = 20* *12 ÷ 4 = 3* *95 ÷ 4 = 23 remainder 3*