Written Calculation Policy – Mevagissey Primary School -2021/22

At Mevagissey Primary School we use the mastery approach to the teaching of mathematics, and this is underpinned by the NCETM Five Big Ideas in Teaching for Mastery. We believe that every child should have access to the same curriculum content and, rather than being extended with new learning. Mastering Maths means acquiring a deep, long-term, secure and adaptable understanding of the subject. At any one point in a pupil's journey through school, achieving mastery is taken to mean acquiring a solid enough understanding of the maths that's been taught to enable him/her move on to more advanced material. **This means children should deepen their conceptual understanding by tackling challenging and varied problems rather than accelerating through concepts. Children should not be extended with new learning before they are ready.** Similarly, with calculation strategies, children must not simply rote learn procedures, but demonstrate their understanding of these procedures through the use of concrete materials and pictorial representations.

It is important that conceptual understanding, supported by the use of representation, is secure for all procedures. Reinforcement is achieved by going back and forth between these representations.

The White Rose schemes of learning cover at least the expected content for each year group in the National Curriculum. It also supports the development of reasoning and problem solving as well as fluency so that all the aims of the National Curriculum are met and links to the DFE's "Ready to progress" criteria. Based on extensive research and years of classroom practice, White Rose schemes are written by practising teachers for teachers. They use a concrete-pictorial-abstract approach to support children to understand the maths they are learning and to be able to use it elsewhere.

- **Concrete representation:** a pupil is first introduced to an idea or skill by acting it out with real objects. This is a 'hands on' component using real objects and is a foundation for conceptual understanding.
- **Pictorial representation:** a pupil has sufficiently understood the 'hands on' experiences performed and can now relate them to representations, such as a diagram or picture of the problem.
- **Abstract representation:** a pupil is now capable of representing problems by using mathematical notation, for example 12 x 2 = 24.

The "small step" approach means nothing is left to chance – all curriculum objectives are broken down into accessible parts that build on each other so the learning journey is complete. Example questions are provided together with notes and guidance for teaching each step; teachers and children are both supported.

This calculation policy is a guide for all Staff at Mevagissey Primary School and has been adapted from work by the NCETM and the White Rose Maths scheme of work. It is purposely set out as a progression of mathematical skills and the different calculation strategies that should be taught and used in Year 1 to Year 6. These strategies and skills are in line with the requirements of the 2014 Primary National Curriculum. All teachers have been given the scheme of work from the White Rose Maths Hub which are used to supplement the planning of appropriate teaching sequences. It is expected that teachers will use their professional judgement as to when consolidation of existing skills is required or if to move on to the next concept.

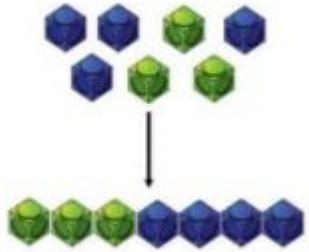
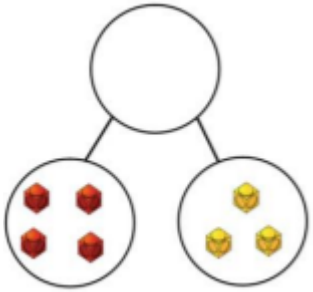
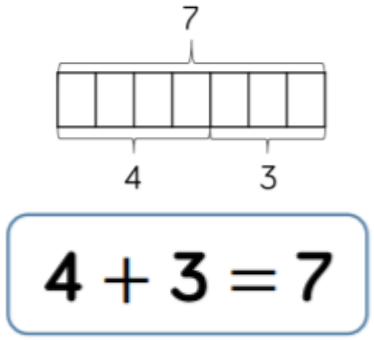
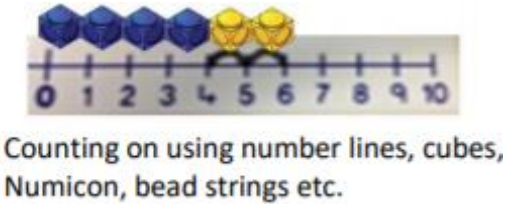
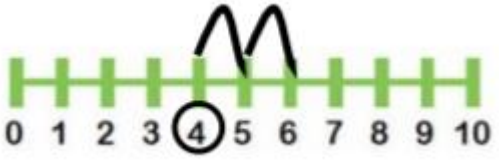
Addition

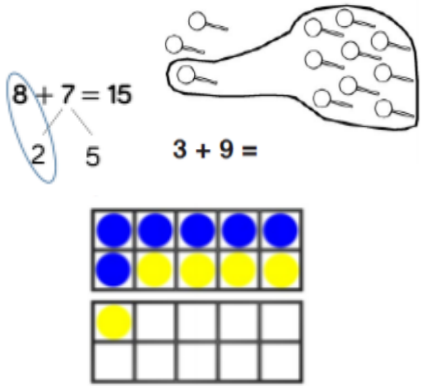
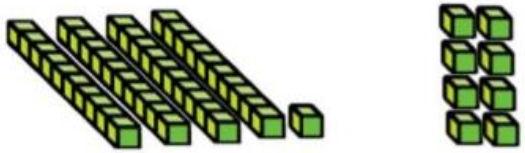
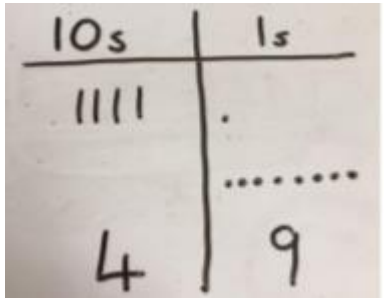
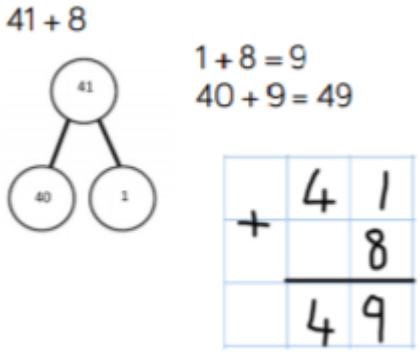
Addition – Year One

National Curriculum 2014 Statutory Requirements.

- Read, write and interpret mathematical statements involving addition (+) and equals (=) signs and relate this to balance sums and scales
- Represent and use number bonds and related subtraction facts within 20
- Add one-digit and two-digit numbers to 20, including zero
- Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as 9 = □ + 7.

Vocabulary:
Groups, part-whole modal, number sentence, part, whole, plus.

Skill	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part whole model.			
	Use part whole model using cubes or Numicon.	Children to represent cubes using dots or crosses. They could put each part on a part whole model too.	4 + 3 = 7. Four is a part, three is a part and the whole is seven.
Starting at the bigger number and counting on.			What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? 4 + 2 =
	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	A bar model which encourages the children to count on, rather than count all. Start at the larger number on the number line and count on in ones.	Place the larger number in your head and count on the smaller number to find the answer.

Regrouping to make 10: using ten frames and counters/cubes or using Numicon.			$6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$
	Start with the bigger number and use the smaller number to make 10. Use ten frames.	Children to draw the ten frame and counters/cubes	Children to develop an understanding of equality.
TO + O using base 10.			
	Continue to develop understanding of partitioning and place value.	Children to represent the base 10. Highlight the importance of ten ones equalling one ten.	Place the larger number in your head and count on the smaller number to find your answer.

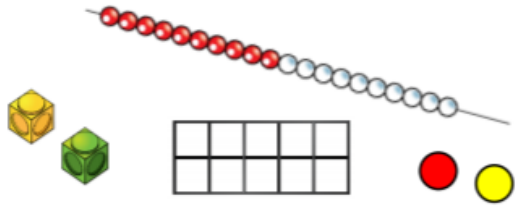
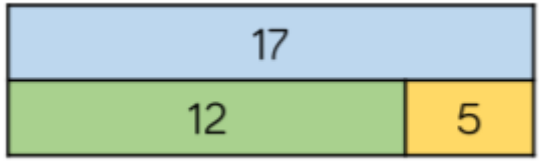
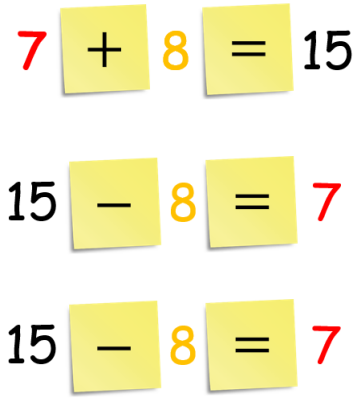
Addition – Year Two

National Curriculum 2014 Statutory Requirements.

- ·Solve problems with addition:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures,
  - applying their increasing knowledge of mental and written methods.
- Recall and use addition facts to 20 fluently and derive and use related facts up to 100.
- Add numbers using concrete objects, pictorial representations and mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers.
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Vocabulary:

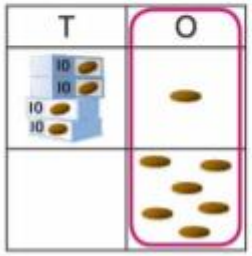
Bridging ten, counting on, inverse operation, partition, add, altogether, commutative, more, total, exchange, how many more, part-whole modal, number sentence, bar modal, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary.

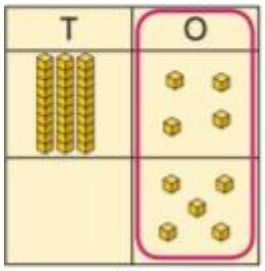
Skill	Concrete	Pictorial	Abstract
Inverse operations **Checking calculations is not restricted to using the inverse. Teacher should discuss using concrete resources, number lines and estimating as part of a wide range of checking strategies.**			
	Use concrete objects to check the prove whether the calculations are correct.	Use the bar model to show the relationship of each number in the number sentences.	Use written method.

<table>
<tr>
<td rowspan="2">Adding a 2-digit number and ones (no bridging beyond 10).

Children should see the pattern when we add and subtract 1 and comment on what happens.</td>
<td>41 is 4 tens and 1 one.
41 add 6 ones is 4 tens and 7 ones.

This can also be done in a place value grid.

 
</td>
<td>34 is 3 tens and 4 ones.
4 ones and 5 ones are 9 ones.
The total is 3 tens and 9 ones.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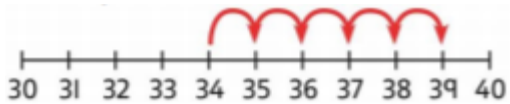
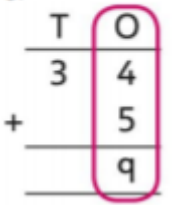
<td> 

34 + 5 = 39

or
 
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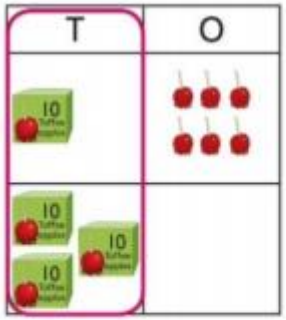
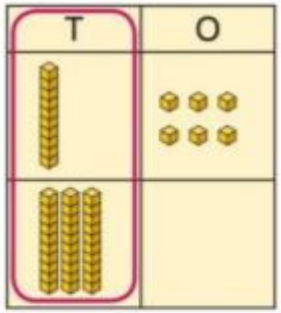
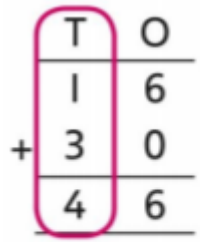
</tr>
<tr>
<td>Children to explore patterns. Use Base 10 and ten frames to make a ten.</td>
<td>Use part whole modal and number line to model.</td>
<td>Understand the link between counting on and using known number facts. Children should be encouraged to use known number bonds to improve efficiency and accuracy.</td>
</tr>
<tr>
<td rowspan="2">Adding a 2-digit number and multiples of ten.

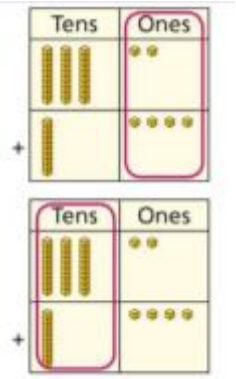
Children should have an understanding of calculation with similar digits. For example, 2+ 5 = 7, so 20 + 50 = 70.</td>
<td> 

16 is 1 ten and 6 ones.
30 is 3 tens.
There are 4 tens and 6 ones in total.</td>
<td> 

16 is 1 ten and 6 ones.
30 is 3 tens.
There are 4 tens and 6 ones in total.</td>
<td> 

1 + 3 = 4
1 ten + 3 tens = 4 tens
16 + 30 = 46</td>
</tr>
<tr>
<td>Explore that the ones digit does not change. Use known bonds and unitising to add 10s.</td>
<td>Base 10 may be used above the number line initially. The calculation will be shown alongside the number line to see the connection. Use known bonds and unitising to add 10s.</td>
<td>Children to continue to develop an understanding of equality.</td>
</tr>
</table>

<table>
<tr>
<td rowspan="2">Add two 2-digit number to 100 (no regrouping).

Focus on language of tens and ones and look at different methods to add the numbers including column method.</td>
<td> 
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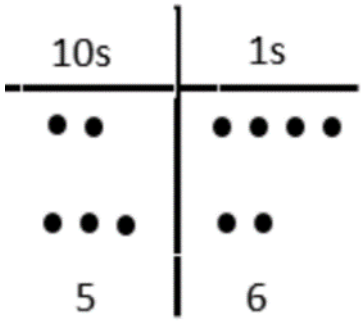
<td> 
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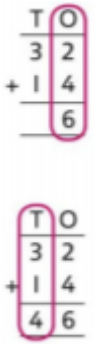
<td> 
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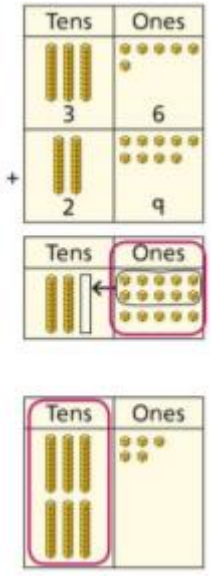
<tr>
<td>Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.</td>
<td>After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.</td>
<td>Addition of two numbers can be done in any order (commutative).</td>
</tr>
<tr>
<td rowspan="2">Add two 2-digit number to 100 (with regrouping).

Use Base 10 and partitioning to add together 2-digit numbers including an exchange.</td>
<td> 
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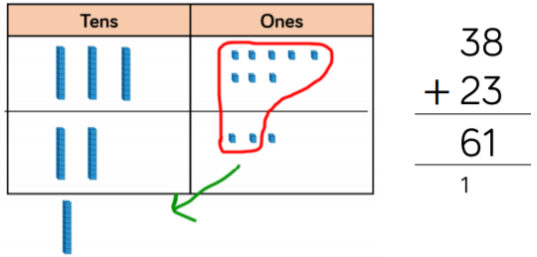
<td> 
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</tr>
<tr>
<td>Add the ones. Exchange ten ones for a ten/ Then add the tens. Addition of two numbers can be done in any order (commutative).</td>
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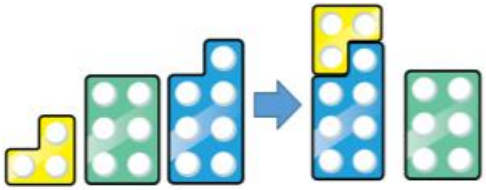
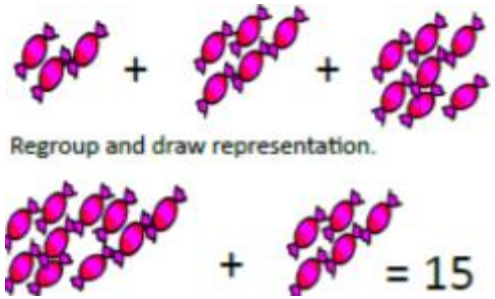
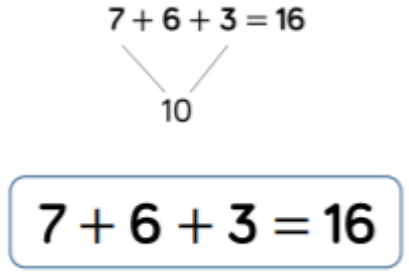
</tr>
</table>

Add three 1-digit. **Use knowledge of commutativity to find the most efficient and quick way to add the three one-digit numbers.**			
	Following on from making 10, make 10 with two of the digits (if possible) then add 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.

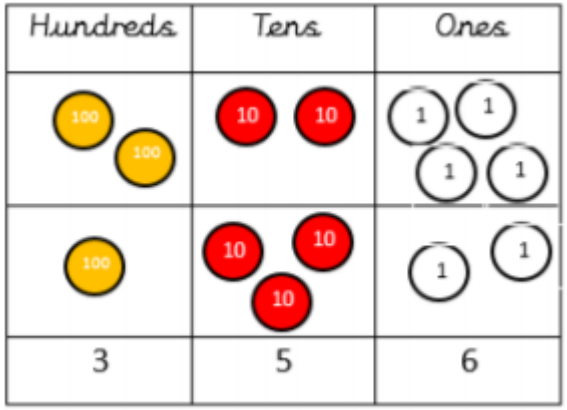
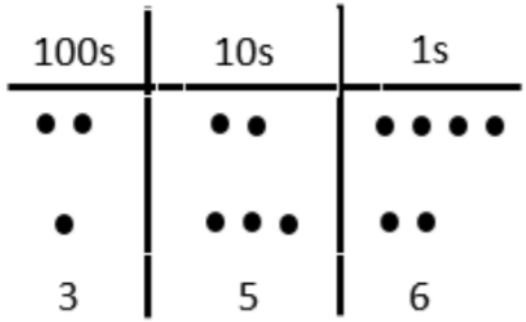
Addition – Year Three

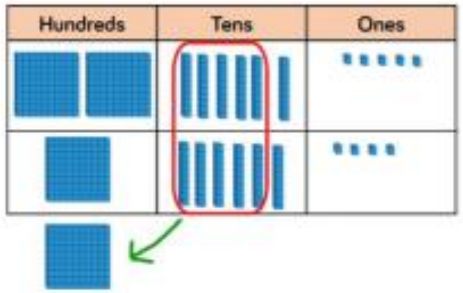
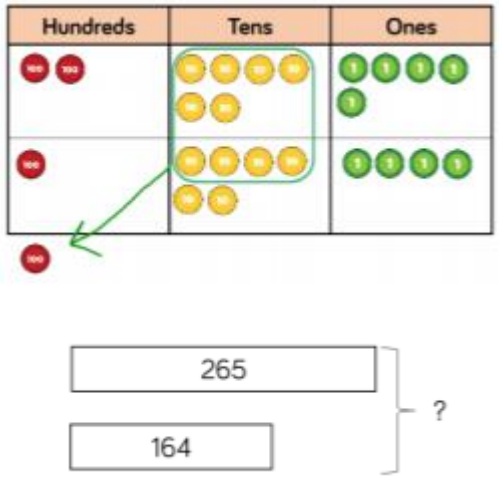
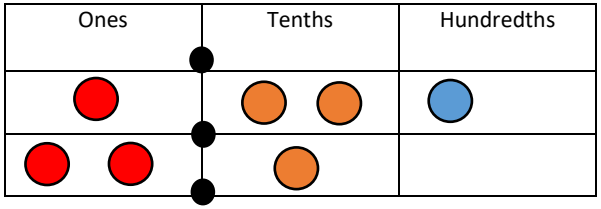
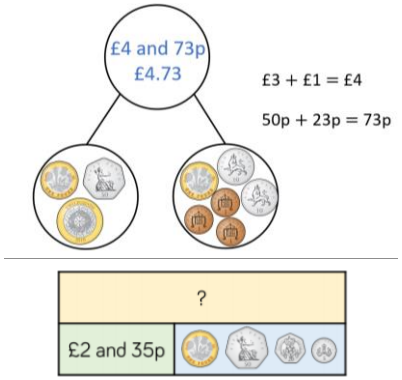
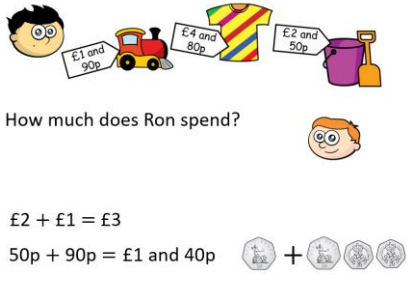
National Curriculum 2014 Statutory Requirements.

- Add numbers mentally including:
  - a 3-digit number and ones
  - a 3-digit number and tens
  - a 3-digit number and hundreds
  - a 3-digit number and thousands
- Add numbers with up to three digits, using formal written methods of columnar addition.
- Estimate the answer to a calculation and use inverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition.

Vocabulary:

+, add, addition, more, plus, make, sum, total, altogether, double, near double, one more, two more… ten more… one hundred more, how many more to make …? how many more is… than …? how much more is…? =, equals, sign, is the same as.

Skill	Concrete	Pictorial	Abstract
Add numbers with up to 3-digit, using formal written methods of columnar (no regrouping). **Focus on the lining up of the digits and setting the additions clearly in columns.**			2 2 3 + 1 1 4 3 3 7
	Using manipulatives, 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 able to draw in a PV chart. Secure knowledge of presentations with the PV columns. The calculation will be shown alongside the model used to see the connection.	Children will move onto recording more formally.

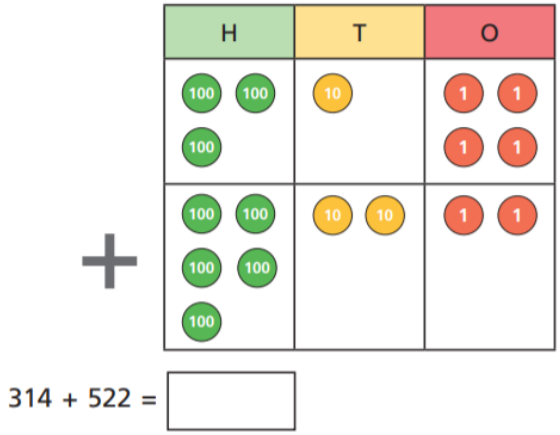
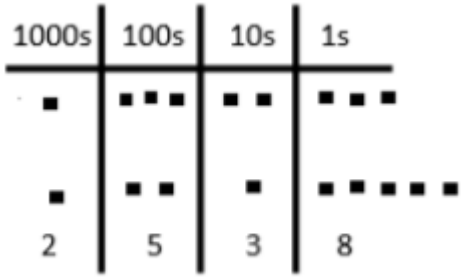
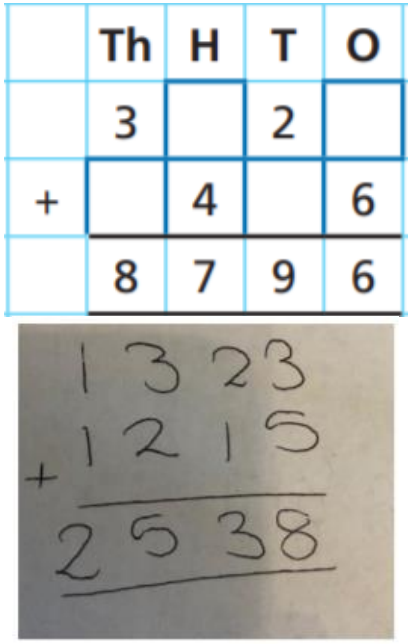
Add numbers with up to 3-digit, using formal written methods of columnar (with regrouping). **Start by adding numbers where there is one exchange required before looking at question where they need to exchange in two columns.**			265 + 164 429 1
	Use of place value counters to add HTO + TO, HTO + HTO. When there are 10 ones in the ones column, we exchange for one ten, when there are ten tens in the tens column, we exchange for one hundred.	Children to represent the counters in a place value chart, circling when they make an exchange.	Children will move onto recording more formally
Add decimals with 2 decimal places, including money.			
	Introduce decimal place value counters and model exchange for addition.	Children to represent the counters in a place value chart, part whole model and a bar model.	As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here

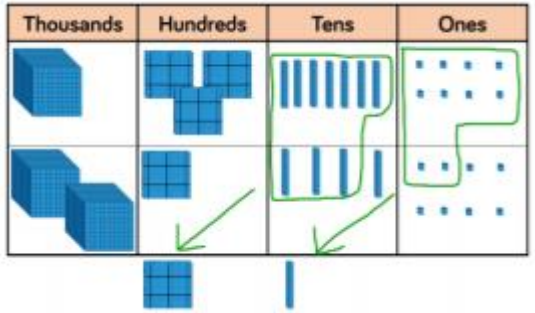
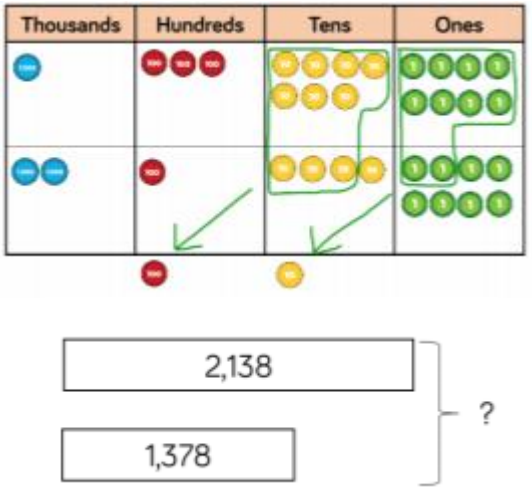
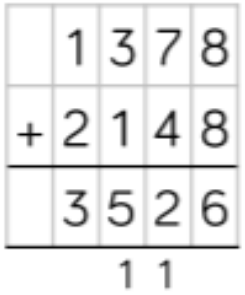
Addition – Year Four

National Curriculum 2014 Statutory Requirements.

- Add with up to 4 digits using the formal written methods of columnar addition where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- Solve two-step problems addition in contexts, deciding which operations and methods to use and why.

Vocabulary:
add, addition, more, plus, increase, sum, total, altogether, double, near double, how many more to make…? tens boundary, hundreds boundary, inverse=, equals sign, is the same as.

Skill	Concrete	Pictorial	Abstract
Column method to add two pairs of numbers up to 4-digits (no exchanges). **Children to use their understanding of addition of 3-digit numbers to add 4-digit numbers with no exchange.**			
	Use of place value counters to add numbers together including numbers up to 4-digits. Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits.	Children to represent the counters in place value chart.	Children will move onto recording more formally. Use inverse knowledge to workout missing numbers.

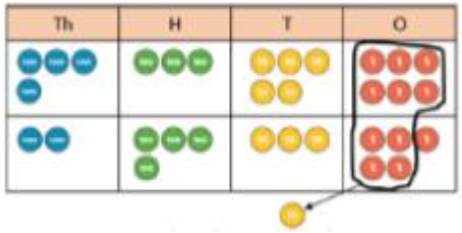
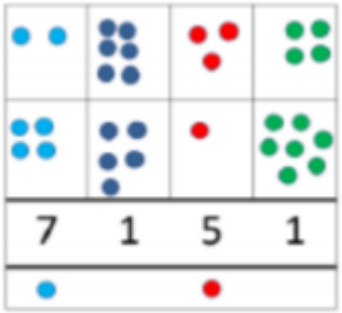
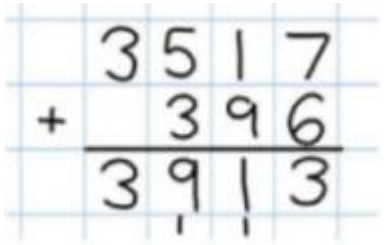
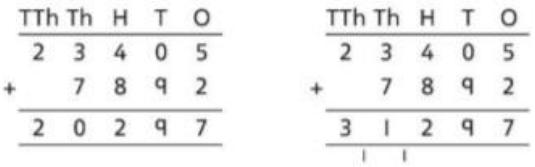
Column method to add two pairs of numbers up to 4-digits (with exchanges). **Start by adding numbers where there is one exchange required before looking at question where they need to exchange in two columns.**			
	Children continue to use Base 10 or place value counters to add, exchanging tens ones for a ten and ten tens for a hundred and ten hundreds for a thousand.	Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.	Children will move onto recording more formally. Use inverse knowledge to workout missing numbers.

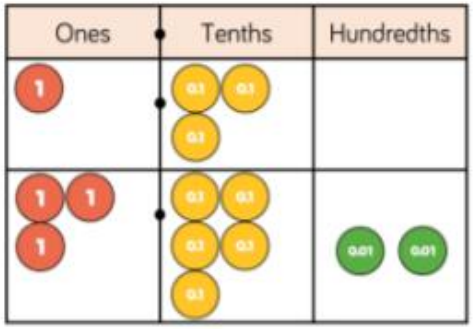
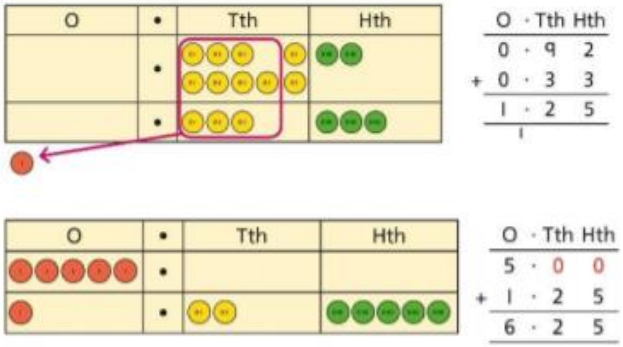
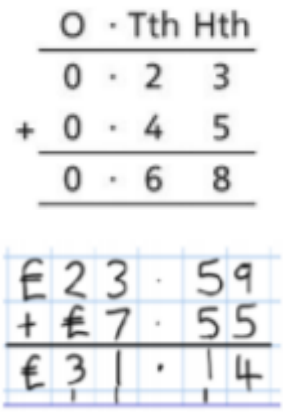
Addition – Year Five

National Curriculum 2014 Statutory Requirements.

- Add whole numbers with more than 4 digits, including using formal written methods (columnar addition).
- Add numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.

Vocabulary:
add, addition, more, plus, increase, sum, total, altogether, double, near double, how many more to make...? inverse, primes, prime factors, composite numbers, equals, sign, is the same as.

Skill	Concrete	Pictorial	Abstract
Column method to add two pairs of numbers with more than 4 digits (with exchanges). **Start by adding numbers where there is one exchange required before looking at question where they need to exchange in two columns.**			  *I will use 23,000 + 8,000 to check.*
	Children continue to use Base 10 or place value counters to add, exchanging tens ones for ten and ten tens for a hundred and ten hundreds for a thousand.	Represent additions, using place value equipment on a place value grid alongside written methods. Bar models represent addition of two or more numbers in the context of problem solving.	Children will move onto recording more formally. Begin to use rounding to +estimate the answer to a calculation.

Adding decimals numbers with different decimal places (up to 3 decimal places). **Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.**	 Exchanges as shown in concrete and pictorial images above.	 	
	Exchanges as shown in concrete and pictorial images above.	Use place value equipment to place value grid to represent addition. Include examples where the numbers of decimal places are different.	Children will move onto recording more formally. Add using a column method, ensuring that children understand the link with place value. Include exchange where required, alongside an understanding of place value and additions where the numbers of decimal places are different.

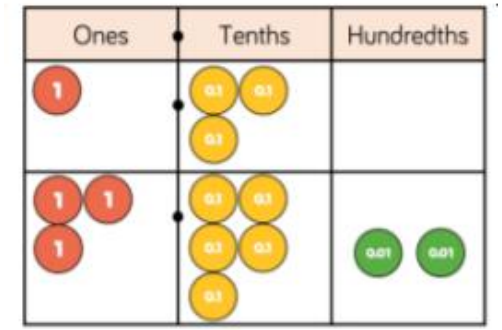
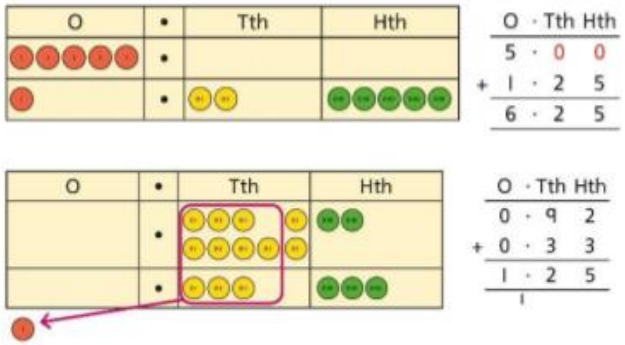
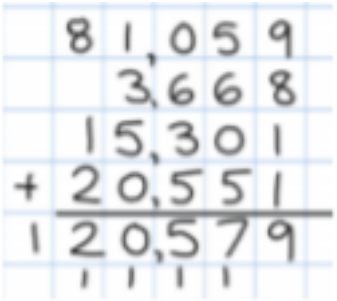
Addition – Year Six

National Curriculum 2014 Statutory Requirements.

- Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.

Vocabulary:

add, addition, more, plus, increase, sum, total, altogether, double, near double, how many more to make...? inverse, primes, prime factors, composite numbers, equals, sign, is the same as.

Skill	Concrete	Pictorial	Abstract
Consolidate understanding using numbers with more than 4 digits and extend by adding numbers with up to 3 decimal places.	 Exchanges as shown in concrete and pictorial images above.		
	As the same as Year 5. Children continue to use Base 10 or place value counters to add, exchanging tens ones for ten and ten tens for a hundred and ten hundreds for a thousand.	**As the same as Year 5.** Represent additions, using place value equipment on a place value grid alongside written methods. Bar models represent addition of two or more numbers in the context of problem solving.	Adding several numbers with increasing complexity. Adding place holders to support place value calculations.

Subtraction

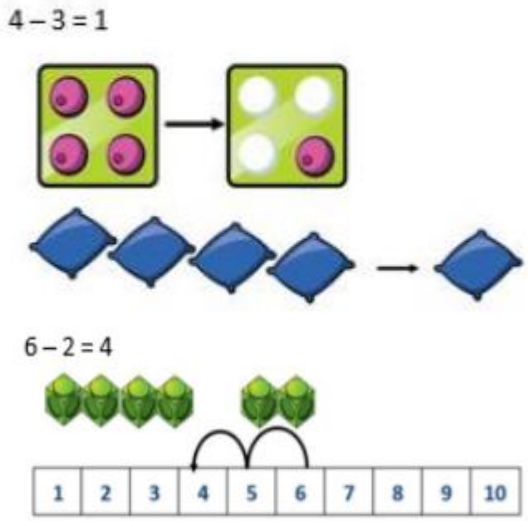
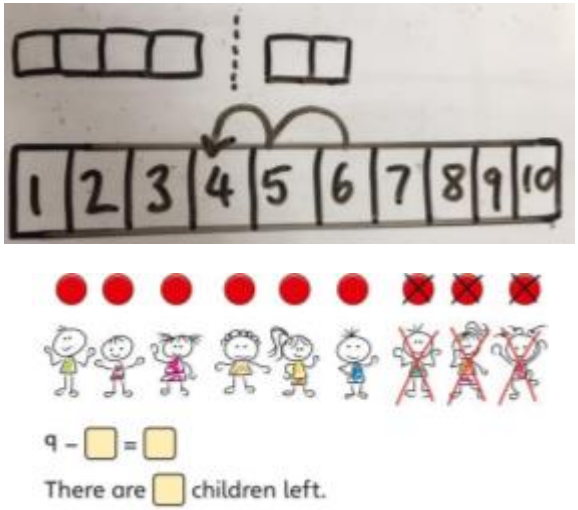
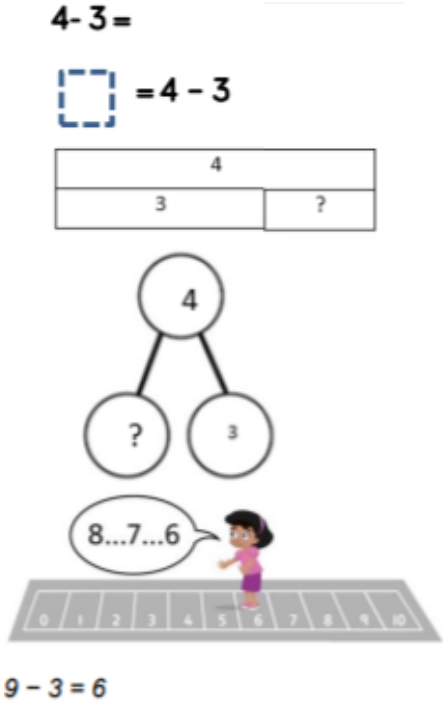
Subtraction – Year One

National Curriculum 2014 Statutory Requirements.

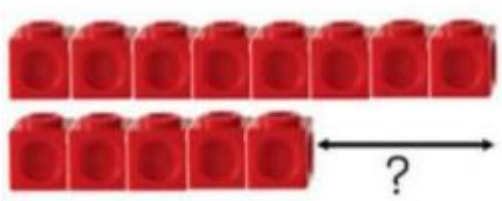
- Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs.
- Represent and use number bonds and related subtraction facts within 20.
- Subtract one-digit and two-digit numbers to 20, including zero.
- Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 9 = □ - 7.

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.

Skill	Concrete	Pictorial	Abstract
Counting back and taking away ones. **Once children understand the concept of taking away, the subtraction symbol can be introduced.**			
	Children physically take away and remove objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used). Counting back (using number lines or number tracks) children start with 6 and count back 2.	Children represent what they see pictorially. Children to draw the concrete resources they are using and cross out the correct amount.	Children to represent the calculation on a number line or number track and show their jumps.

<table>
<tr>
<td rowspan="2">Finding the difference (bar model).

Children could use their skills of counting back and on to help them find the difference.</td>
<td> 
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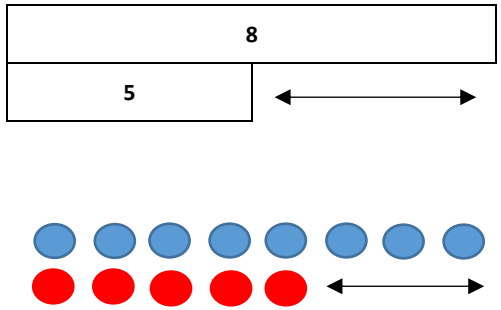
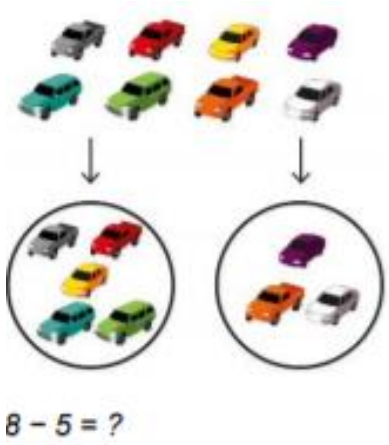
<td> 
</td>
<td rowspan="2">Find the difference between 8 and 5.

8 – 5, the difference is □

Children to explore why
9 - 6 = 8 – 5 = 7 – 4
have the same difference.</td>
</tr>
<tr>
<td>Finding the difference (using cubes, Numicon etc)</td>
<td>Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate. This can also been show on a number too.</td>
</tr>
<tr>
<td rowspan="2">Finding missing part, given a whole and a part.

Children need to understand that a number can be partition into two or more parts. This will help them with numbers and addition.</td>
<td> 
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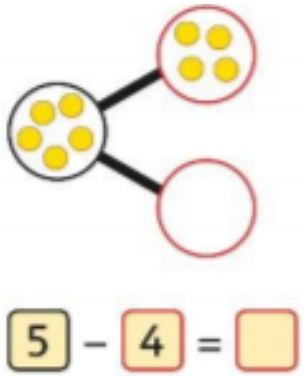
<td> 
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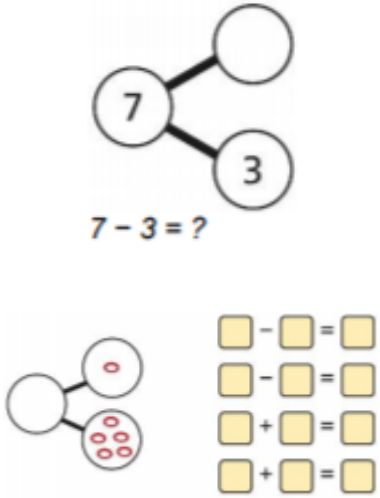
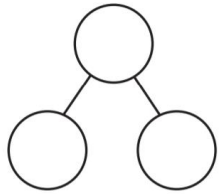
<td> 
</td>
</tr>
<tr>
<td>Children separate a whole into parts and understand how one part can be found by subtraction.</td>
<td>Children represent a whole and a part and understand how to find the missing part by subtraction.</td>
<td>Children use a part-whole model to support the subtraction to find a missing part. Children develop an understanding of the relationship between addition and subtraction facts in a part-whole model.</td>
</tr>
</table>

Subtract 1 digit and 2-digit numbers to 20.	Who has more? Eva 12 Alex 7 How many more does Eva have? 5 12 − 7 = 5	Rosie has 15 cakes.  Her friends eat 6 cakes. How many cakes does Rosie have left? □ − □ = □ Rosie has □ cakes left. Jack has 11 apples. Mo has 5 apples. Jack 11 Mo 5	There are 17 animals on a farm. There are 9 horses. The rest of the animals are sheep. **a)** How many sheep are there?  □ − □ = □ There are □ sheep.
	Understand when and how to subtract 1s efficiently.	Understand when and how to subtract 1s efficiently.	Understand how to use knowledge of bonds within 10 to subtract efficiently.

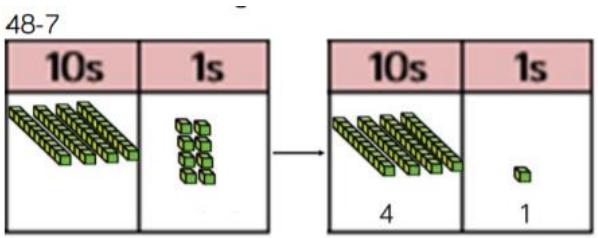
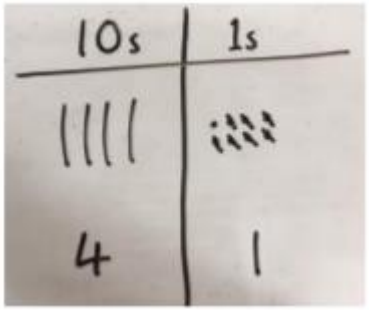
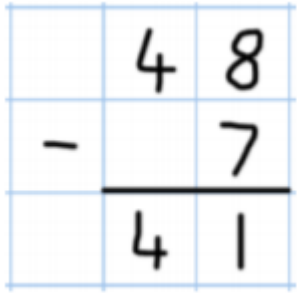
Subtraction – Year Two

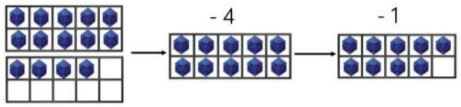
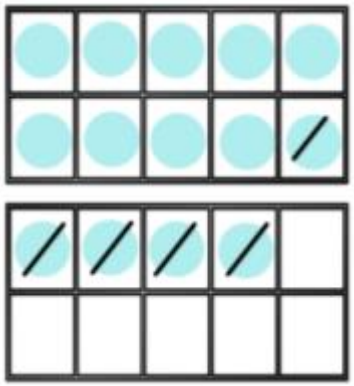
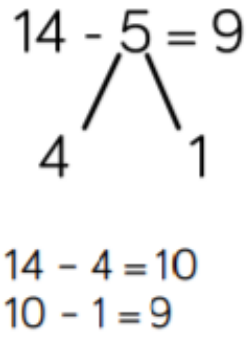
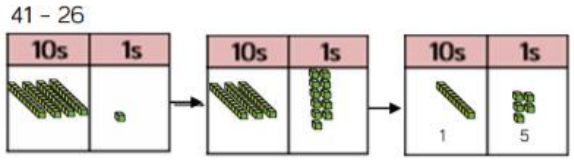
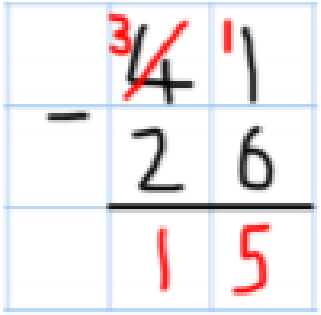
National Curriculum 2014 Statutory Requirements.

- -Solve problems with subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures.
- -Applying their increasing knowledge of mental and written methods
- - Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100
- - Subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
- -Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- -Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

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 ones.

Skill	Concrete	Pictorial	Abstract
Subtracting a single digit (no exchanging).			
	Column method using base 10.	Children to represent the base 10 pictorially.	Column method or children could count back 7.

Make 10 strategy. **For the first time, children will be introduced to subtraction where they cross the ten.**			
	Making 10 using ten frames	Children to present the ten frame pictorially and discuss what they did to make 10.	Children to show how they can make 10 by partitioning the subtrahend.
Subtracting a 2-digit number (with exchanging). **They have already seen what happens when there are more than 10 ones and should be confident in exchanging to ones for one 10.**			
	Column method using base 10 and having to exchange. Subtract the 1s. Then subtract the 10s. This may be done in or out of a place value grid.	Represent the base 10 pictorially, remembering to show the exchange.	Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because 41 = 30 + 11.

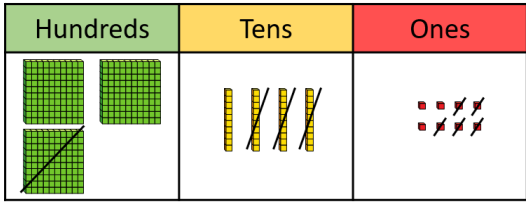
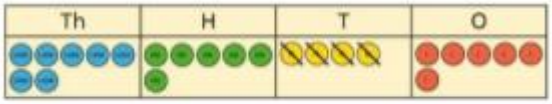
Subtraction – Year Three

National Curriculum 2014 Statutory Requirements.

- Subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
  - a three-digit number and thousands
- Subtract numbers with up to three digits, using formal written methods of columnar subtraction.
- Estimate the answer to a calculation and use inverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.

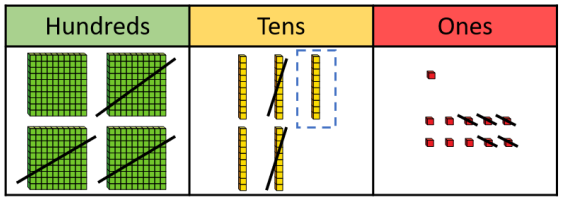
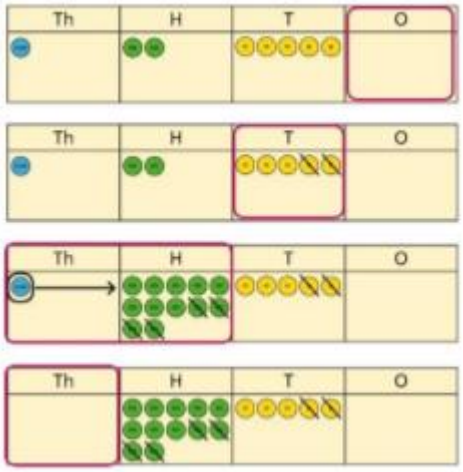
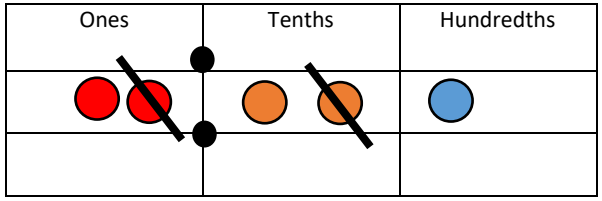
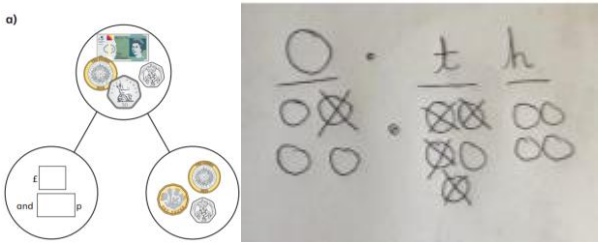
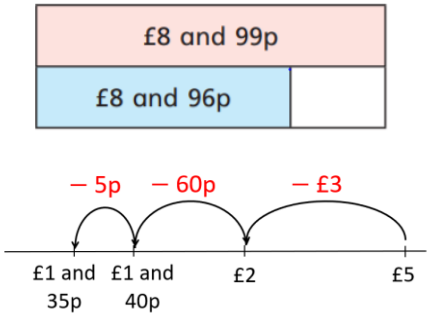
Vocabulary:

Take (away), leave, How many are left/left over? How many have gone? One less, two less… ten less…How many fewer is…than…? Difference between is the same as, Subtract, minus, How much less is? Half, halve, Equals, sign, One hundred less, Tens boundary, Subtraction, Hundreds boundary

Skill	Concrete	Pictorial	Abstract
Using column method to subtract pairs of numbers (no exchanging). Up to 3 digits.			
		7,646 − 40 = 7,606	
	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.

	H	T	O
	3	4	8
−	1	3	5
	2	1	3

	H	T	O
	5	9	9
−	3	5	2
	2	4	7

Using the column method to subtract pairs of numbers (with exchanging). Up to 3 digits.	 H T O 4 $^{4}\cancel{5}$ $^{1}1$ − 3 2 5 1 2 6		H T O $^{3}\cancel{4}$ $^{17}\cancel{8}$ $^{1}1$ − 1 9 4 2 8 7
	Use equipment to enact the exchange of 1 hundred for 10 tens, and 1 ten for 10 ones.	Children may draw Base 10 or PV counters and cross off.	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.
Subtract decimals with 2 decimal places, including money.			
	Explore complements to a whole number by working in the context of length.	Use a place value grid to represent the stages of column subtraction, including exchanges where required.	Use column subtraction, with an understanding of place value, including subtracting numbers with different numbers of decimal places.

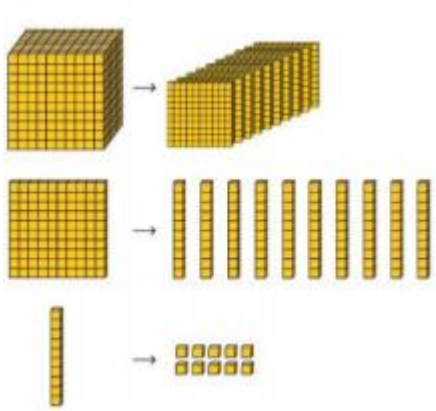
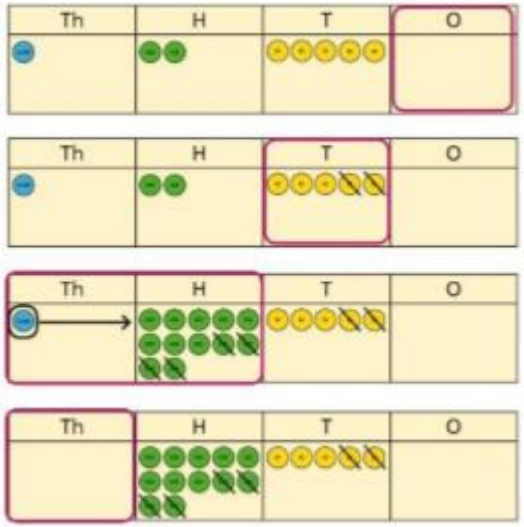
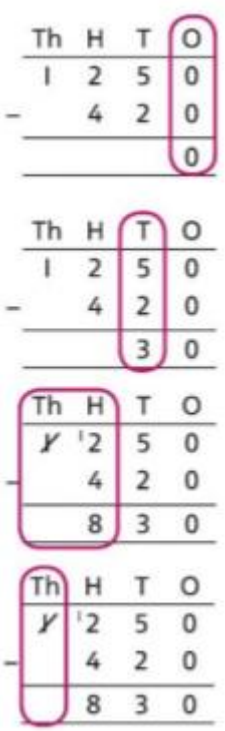
Subtraction – Year Four

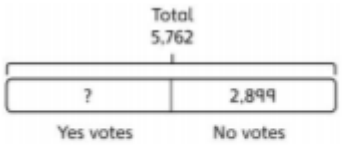
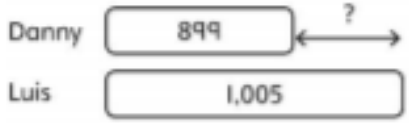
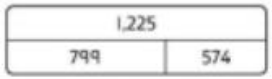
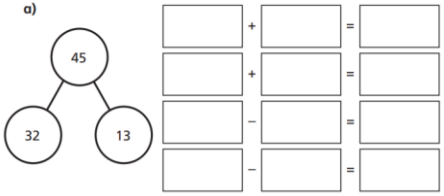
National Curriculum 2014 Statutory Requirements.

- Subtract with up to 4 digits using the formal written methods of columnar subtraction where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Vocabulary:

Take (away), leave, how many are left/left over? How many have gone? One less, two less… ten less…How many fewer is…than…? Difference between is the same as, Subtract, minus, How much less is? Half, halve, equals, sign, one hundred less, tens boundary, Subtraction, hundreds boundary, Decrease, Inverse

Skill	Concrete	Pictorial	Abstract
Using expanded column method to subtract pairs of numbers (with exchanging). Up to 4 digits. **Explore what happens when a subtraction has more than one exchange. Encourage children to continue to explain their workings.**			
	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. Use of bar model to support understanding.	Use column subtraction, with understanding of the place value of any exchange required. Children must understand what has happened when they have crossed out digits.

Inverse operations and checking strategies. **Checking using inverse is to be encouraged so that children are using a different method and not just potentially repeating an error.**		 *I can work out the total number of Yes votes using 5,762 − 2,899.* 	*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 bar models to represent subtractions where a part needs to be calculated. Bar models can also represent 'find the difference' as a subtraction problem.	Use inverse operations to check subtractions.

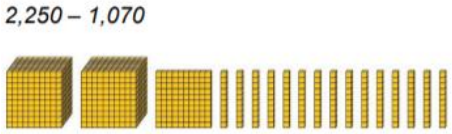
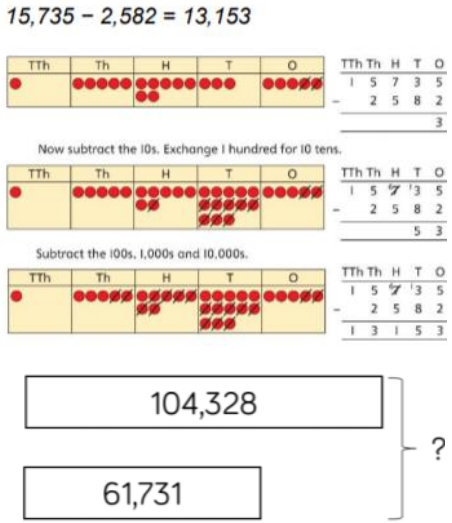
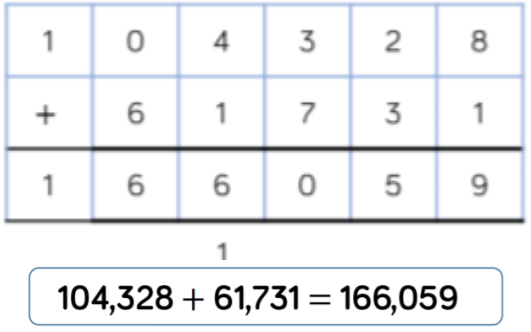
Subtraction – Year Five

National Curriculum 2014 Statutory Requirements.

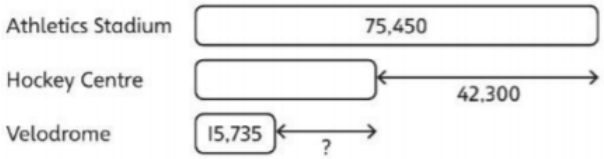
- Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)
- Subtract numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Vocabulary:

Take (away), leave, how many are left/left over? How many have gone?
One less, two less… ten less…How many fewer is…than…? Difference between is the same as, Subtract, minus, how much less is? Half, halve, equals, sign, one hundred less, tens boundary, Subtraction, Hundreds boundary, Decrease, Inverse, ones boundary, tenths boundary

Skill	Concrete	Pictorial	Abstract
Subtracting with at least 4-digit numbers (with exchange). **Build on Year 4 knowledge of subtracting using the formal column method. Children will be focusing on more than one exchange.**			
	Use place value equipment to understand where exchanges are required.	Represent the stages of the calculation using place value equipment on a grid alongside the calculation, including exchanges where required.	Use column subtraction methods with exchange where required.

<table>
<tr>
<td rowspan="2">Inverse operations.

They will use the commutative law to see that addition can be done in any order but subtraction cannot.</td>
<td></td>
<td> 
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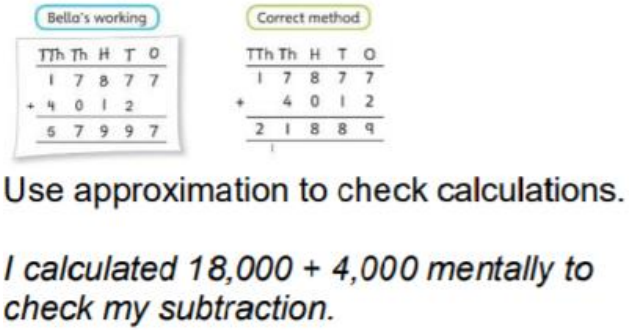
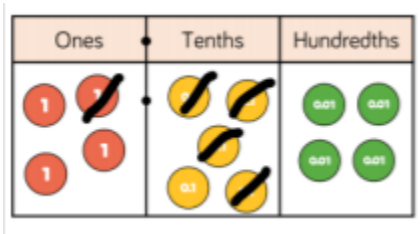
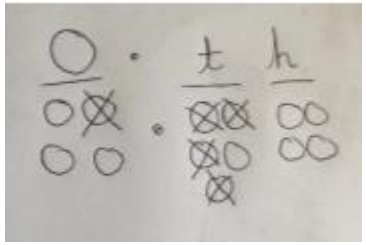
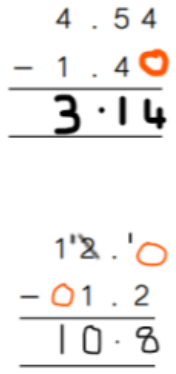
<td> 
</td>
</tr>
<tr>
<td></td>
<td>Bar models represent subtractions in problem contexts, including ‘find the difference’.</td>
<td>Children can explain the mistake made when the columns have not been ordered correctly.</td>
</tr>
<tr>
<td rowspan="2">Subtracting decimals up to 3 decimal places.

They continue to focus on the importance of lining up the decimal point in order to ensure correct place value. Children identify the importance of zero as a place holder.</td>
<td> 
</td>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>Explore complements to a whole number by working in the context of length.</td>
<td>Use a place value grid to represent the stages of column subtraction, including exchanges where required.</td>
<td>Use column subtraction, with an understanding of place value, including subtracting numbers with different numbers of decimal places.</td>
</tr>
</table>

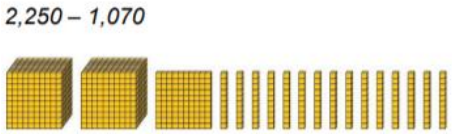
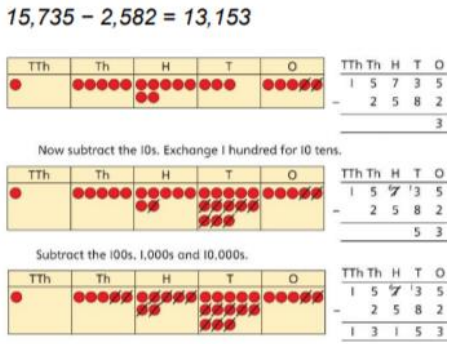
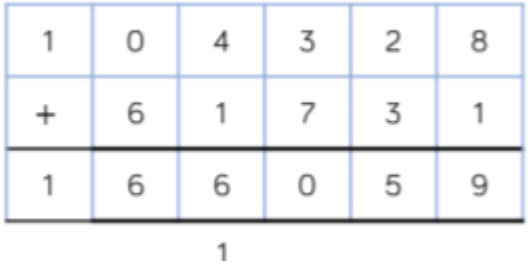
Subtraction – Year Six

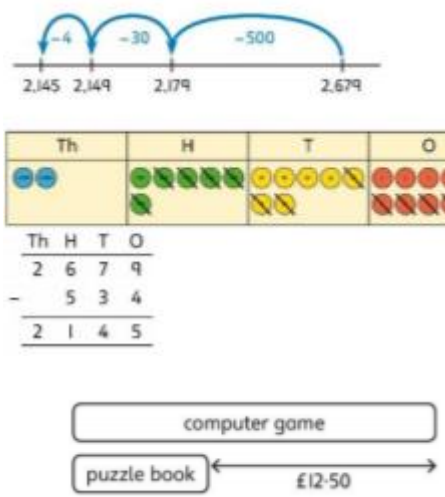
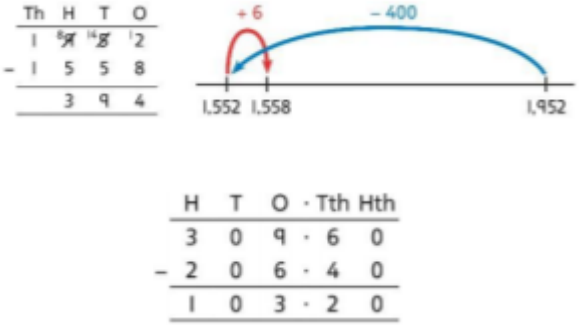
National Curriculum 2014 Statutory Requirements.

- Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Vocabulary:

Take (away), leave, how many are left/left over? How many have gone?
One less, two less… ten less…How many fewer is…than…? Difference between is the same as, Subtract, minus, how much less is? Half, halve, equals, sign, one hundred less, tens boundary, subtraction, hundreds boundary, decrease, Inverse, ones boundary, tenths boundary.

Skill	Concrete	Pictorial	Abstract
Subtracting with at least 4-digit numbers (with exchange). **Build on Year 4 knowledge of subtracting using the formal column method. Children will be focusing on more than one exchange.**			
	As seen in Year 5. Use place value equipment to understand where exchanges are required.	**As seen in Year 5.** Represent the stages of the calculation using place value equipment on a grid alongside the calculation, including exchanges where required.	**As seen in Year 5.** Use column subtraction methods with exchange where required.

Multi-step problems – comparing and selecting efficient methods. **Using their knowledge of addition and subtract to solve multi-step problems.**			
	Use counters on a place value grid to represent subtractions of larger numbers	Compare subtraction methods alongside place value representations. Use a bar model to represent calculations, including 'find the difference' with two bars as comparison.	Compare and select methods. Use column subtraction when mental methods are not efficient. Use two different methods for one calculation as a checking strategy. Use column subtraction for decimal problems, including in the context of measure.

Multiplication

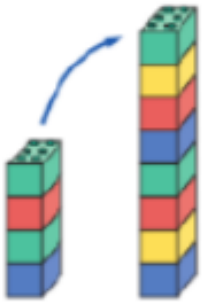
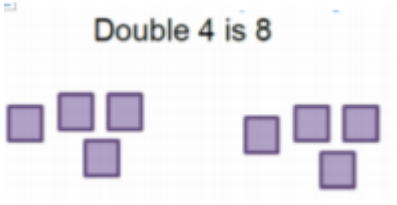
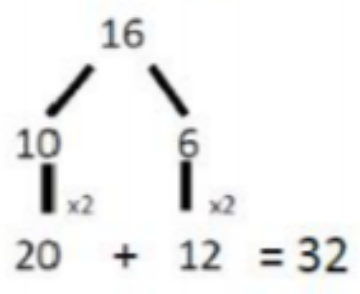
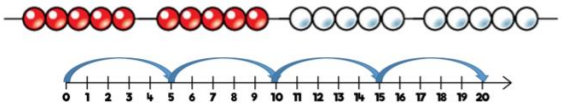
Multiplication – Year 1

National Curriculum 2014 Statutory Requirements.

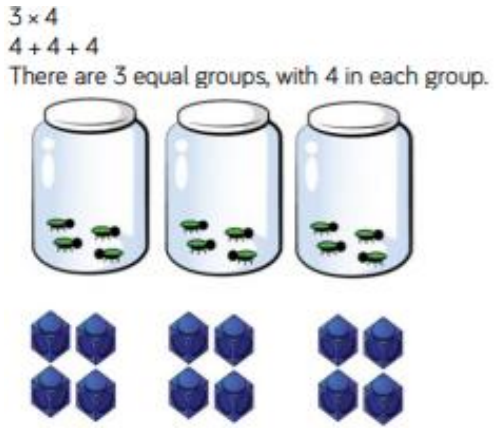
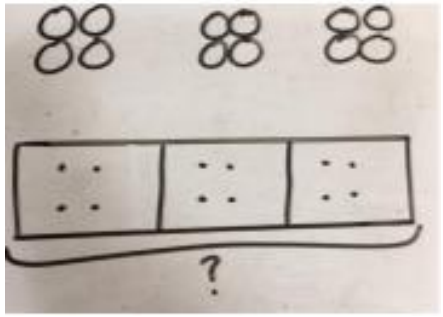
- Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Vocabulary:

Groups of, lots of, times, array, altogether, multiply.

Skill	Concrete	Pictorial	Abstract
Doubling **Children explore doubling with numbers up to 20 Reinforce understanding that 'double' is two groups of a number or an amount.**			
	Use practical activities using manipultives including cubes and Numicon to demonstrate doubling.	Draw pictures to show how ot double numbers.	Partition a number and then double each part before recombining it back together.
Counting in multiples (2s, 5s and 10s).			Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30
	Count in multiples supported by concrete objects in equal groups. Children use a variety of objects and resources to group.	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.

<table>
<tr>
<td rowspan="2">Repeated addition/ grouping

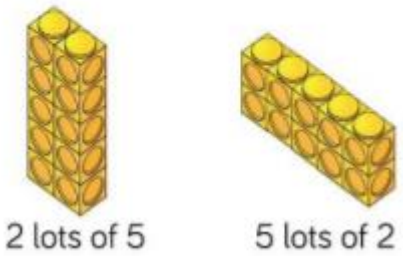
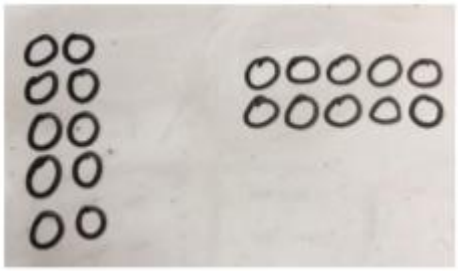
Children start with a given total and make groups of an equal amount. They record their understanding in sentences, not through formal division at this stage.</td>
<td> 
</td>
<td> 
</td>
<td rowspan="2">$5 + 5 + 5 + 5 = 20$
$4 \times 5 = 20$
$5 \times 4 = 20$</td>
</tr>
<tr>
<td>Children use their knowledge of counting in multiples to understand repeated grouping/addition.</td>
<td>Children to represent the practical resources in a picture and use a bar mode.</td>
</tr>
</table>

Multiplication – Year 2

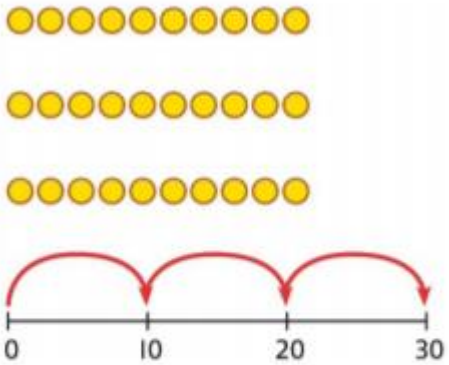
National Curriculum 2014 Statutory Requirements.

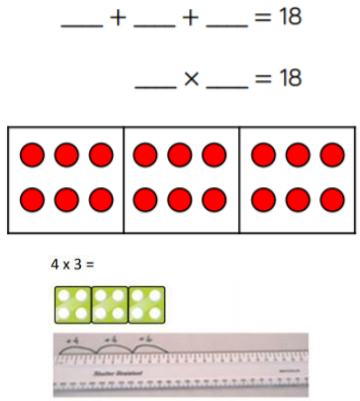
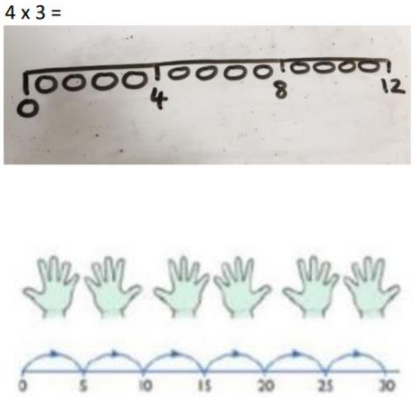
- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

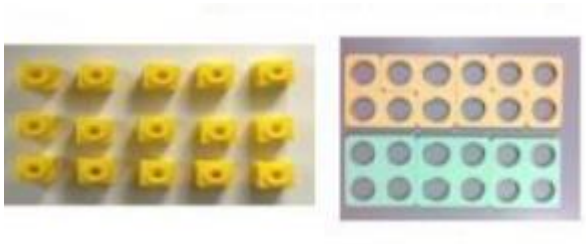
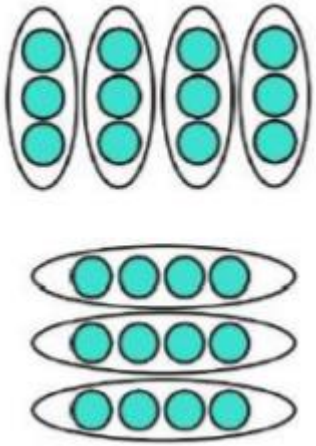
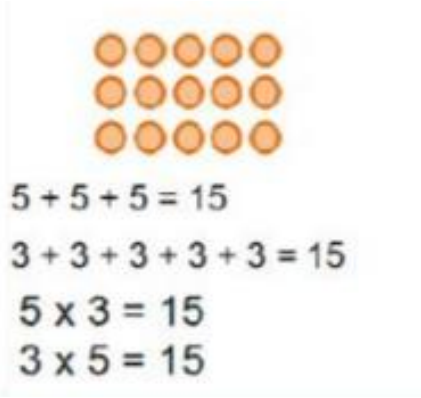
Vocabulary:
Groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, sets of, equal groups, times as big as, commutative.

Skill	Concrete	Pictorial	Abstract
Arrays **Children explore arrays to see the commutativity of multiplication facts e.g. 5 × 2 = 2 × 5 The use of the array could be used to help children calculate multiplication statements.**	2 × 5 = 5 × 2  2 lots of 5 5 lots of 2		Children to be able to use an array to write a range of calculations e.g. 10 = 2 × 5 5 × 2 = 10 2 + 2 + 2 + 2 + 2 = 10 10 = 5 + 5
	Understand the relationship between arrays, multiplication and repeated addition.	Understand the relationship between arrays, multiplication and repeated addition.	Understand the relationship between arrays, multiplication and repeated addition.

<table>
<tr>
<td rowspan="2">Counting in multiplies of 2s, 5s, and 10s.

Children should be comfortable with the concept of multiplication so they can apply this to multiplication tables.</td>
<td> 
3 groups of 10 … 10, 20, 30
3 × 10 = 30</td>
<td> 
10 + 10 + 10 = 30
3 × 10 = 30</td>
<td>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</td>
</tr>
<tr>
<td>Develop an understanding of how to unitise groups of 2, 5 and 10 and learn corresponding times-table facts.</td>
<td>Understand how to relate counting in unitised groups and repeated addition with knowing key times-table facts</td>
<td>Count in multiples of a number aloud.</td>
</tr>
<tr>
<td rowspan="2">Repeated addition.

Children begin to connect equal groups to repeated addition.</td>
<td> 
___ + ___ + ___ = 18
___ × ___ = 18
4 x 3 =</td>
<td> 
4 x 3 =</td>
<td><table>
<tr><th>Addition</th><th>Multiplication</th><th>Story</th></tr>
<tr><td>10 + 10 + 10</td><td></td><td></td></tr>
<tr><td></td><td>6 × 5</td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table></td>
</tr>
<tr>
<td>Use arrays to visualise commutativity.</td>
<td>Form arrays using counters to visualise commutativity. Rotate the array to show that orientation does not change the multiplication.</td>
<td>Use arrays to visualise commutativity.</td>
</tr>
</table>

Multiplication is commutative. **Children describe equal groups using stem sentences to support them. It is important that children know which groups are equal and unequal, and why they are equal or unequal.**			
	Create arrays using counters/ cubes to show multiplication sentences. Children should understand that an array can represent different equations and that, as multiplication is communitive. The order of multiplication doesn't affect the answer.	Draw arrays in different rotations to find commutative multiplication sentences.	Use an array to write multiplication sentences and reinforce repeated addition

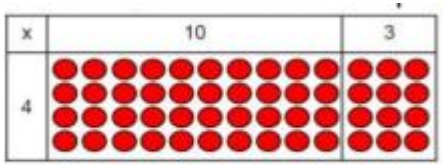
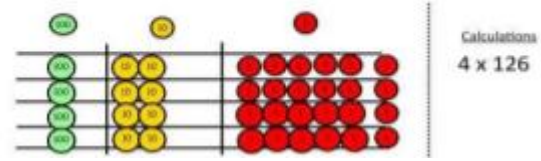
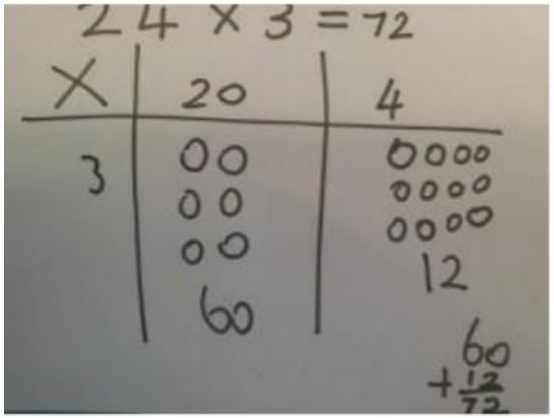
Multiplication – Year 3

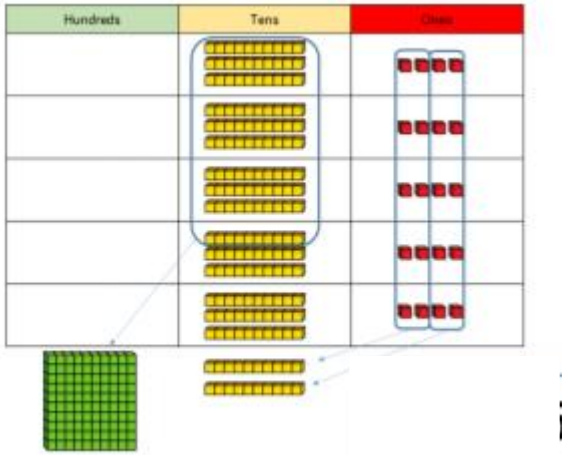
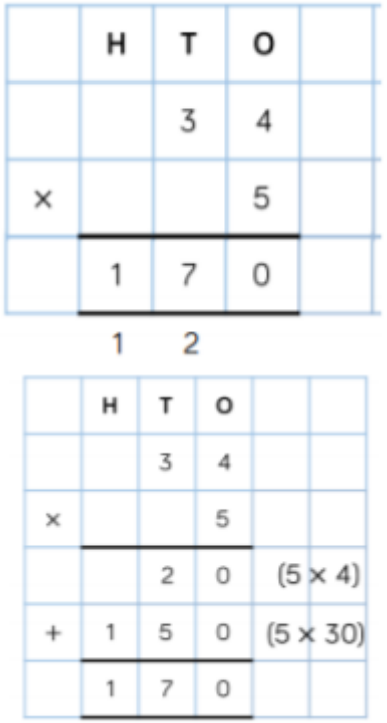
National Curriculum 2014 Statutory Requirements.

- Recall and use multiplication facts for the 3, 4 ,8 and 9 multiplication tables.
- Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Solve problems involving missing number problems involving multiplication including positive number scaling problems and correspondence problems where n objects are connected to m objects.

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.

Skill	Concrete	Pictorial	Abstract
Area method – multiplying two-digit number by a one-digit number. **Introduce in Year 3 due to being taught in Year 5.**	 4 rows of 10, 4 rows of 3 Fill each row with 126. 		 210 + 35 = 245
	Show the link with arrays to first introduce the area method. Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.	Children can represent the work they have done with place value counters in a way that they understand. They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.	Start with multiplying by one-digit numbers and showing the clear addition alongside the grid. Moving forward, multiply by a 2 digit number showing the different rows within the area method.

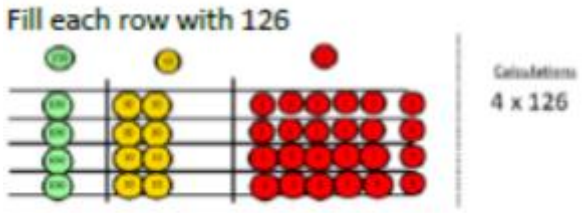
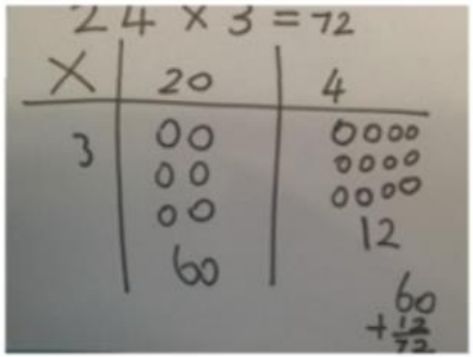
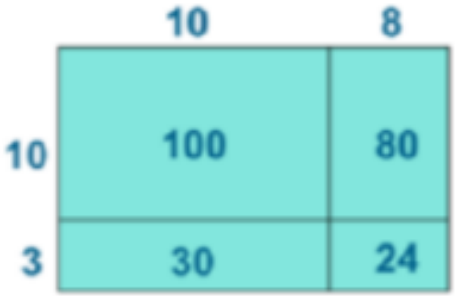
Multiplying two-digit number by a one-digit number.			
	Formal column method with place value counters (base 10 can also be used.) 3 × 23	Children to represent the counters pictorially.	Children to record what it is they are doing to show understanding

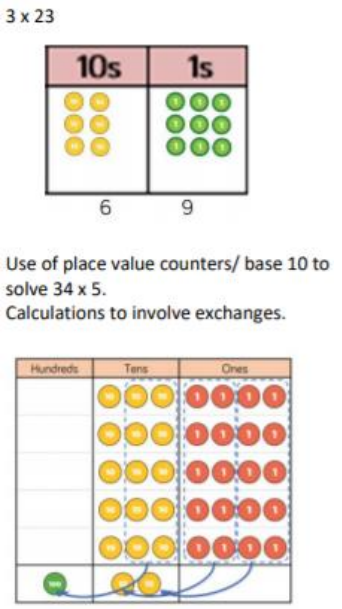
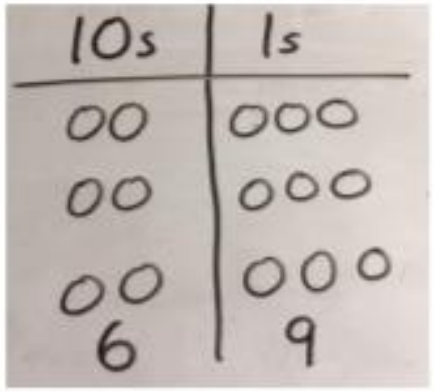
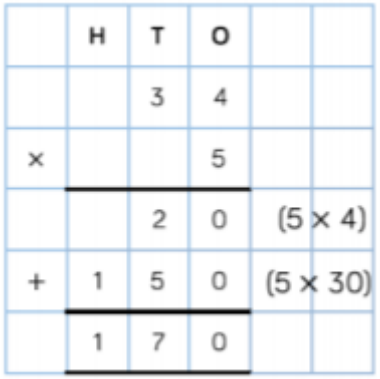
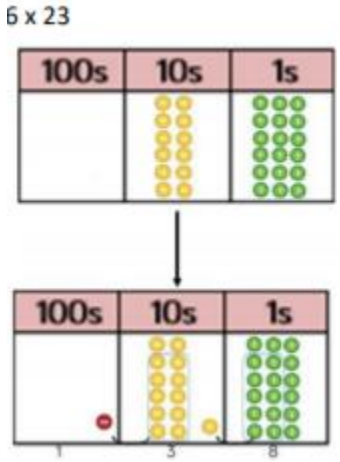
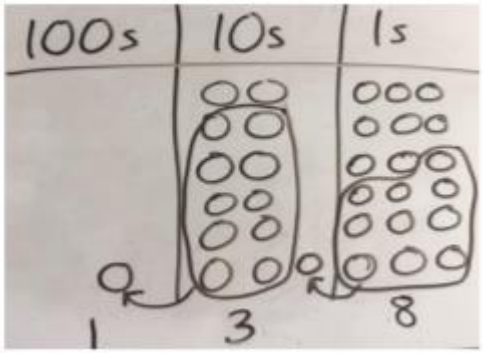
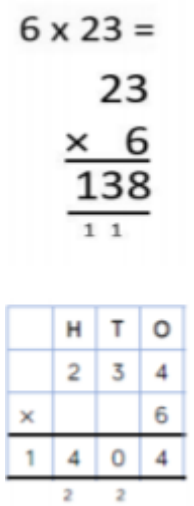
Multiplication – Year Four

National Curriculum 2014 Statutory Requirements.

- Recall and use multiplication facts for multiplication tables up to 12 x 12.
- Use place value, known and derived facts to multiply mentally, including: x0 x1 and multiplying together three numbers.
- Recognise and use factor pairs and commutativity in mental calculations.
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
- Solve problems involving multiplying, including the distributive law to multiply two-digit numbers by one digit including positive number scaling problems and correspondence problems where n objects are connected to m objects.

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.

Skill	Concrete	Pictorial	Abstract
Area method recap from year 3 for 2 digits x 1 digit.			
	As Year 3. Use place value counters/base 10.	**As Year 3.** Children represent the counters pictorially	**As Year 3.** Children to add up each column to find the answer.

<table>
<tr>
<td rowspan="2">Column method with expanded layout.
(Up to 4 digit numbers multiplied by 1 or 2 digits)</td>
<td> 
</td>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td>Use place value counters/base 10</td>
<td>Children represent the counters pictorially.</td>
<td>Expanded form for multiplication.</td>
</tr>
<tr>
<td rowspan="2">Short multiplication
(Up to 4 digit numbers multiplied by 1 digit number).</td>
<td> 
</td>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td>Use place value counters/base 10 to model exchanges.</td>
<td>Children represent the counters/base 10 pictorially.</td>
<td>Formal written method.</td>
</tr>
</table>

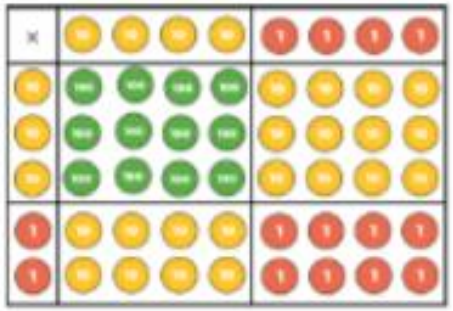
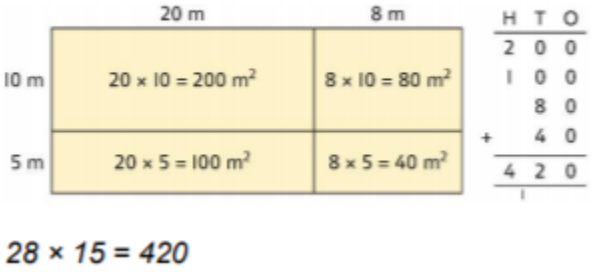
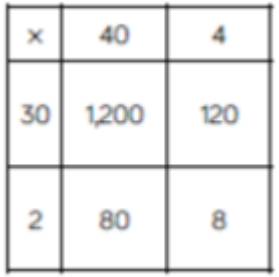
Multiplication – Year Five

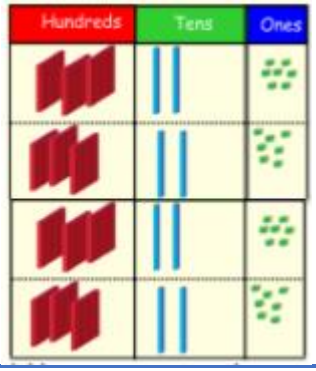
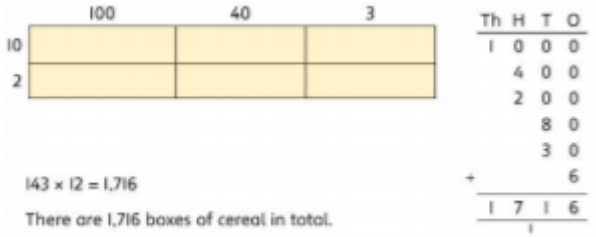
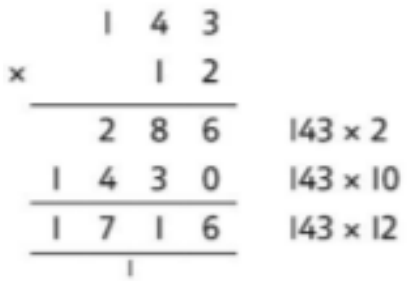
National Curriculum 2014 Statutory Requirements.

- Identify multiples and factors: all factor pairs of a number, common factors of two numbers, establish whether a number up to 100 is prime and recall prime numbers up to 19.
- Multiply numbers up to four digits by a one or two-digit number using a formal written method.
- Multiply whole numbers and those involving decimals by 10, 100 and 1000.

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

Skill	Concrete	Pictorial	Abstract
Multiplication of 2 digit by 2 digit numbers using the area model.	44 x 32 	28 × 15 = ?  28 × 15 = 420	
	Ensure that the area model reflects the correct proportions. Use of base 10 and counters.	Children represent the counters/base 10 pictorially.	Use column multiplication, ensuring understanding of place value at each stage.

Long multiplication – multiplying up to 4 digit numbers by 2 digit numbers.			
	Manipulatives may still be used with the corresponding long multiplication modelled alongside.	Use the area model then add the parts.	Use column multiplication, ensuring understanding of place value at each stage.

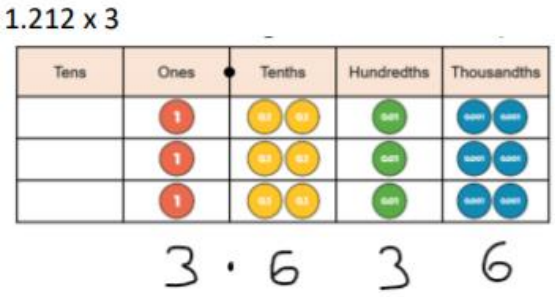
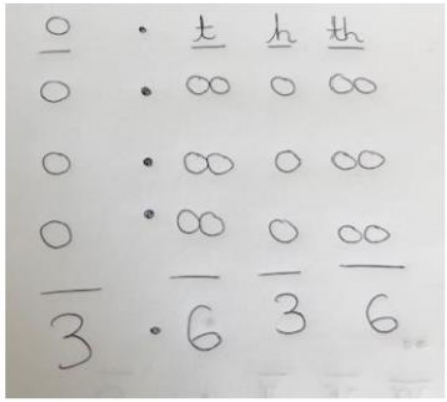
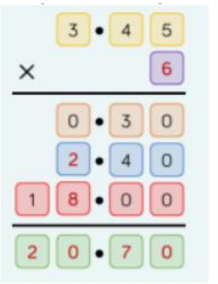
Multiplication – Year Six

National Curriculum 2014 Statutory Requirements.

- Identify multi-digit numbers up to 4 digits by a two-digit number using formal, long multiplication.
- Identify common factors, common multiples and common prime numbers.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.

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.

Skill	Concrete	Pictorial	Abstract
Multiply decimal up to 3 decimal place by a single digit.			 Move onto short multiplication method: 3.45 X 6 20.70
	Multiplying decimal numbers (up to 3 decimal places) by integers.	Represent calculations on a place value grid.	Remind children that the single digits belong in the ones column. Line up the decimal points in the question and the answer.

Division

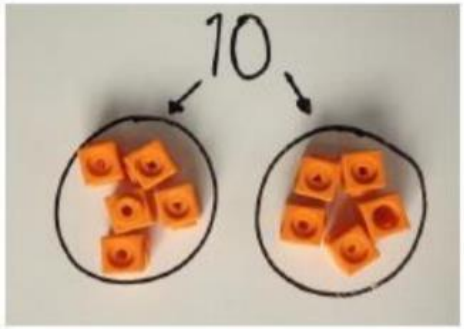
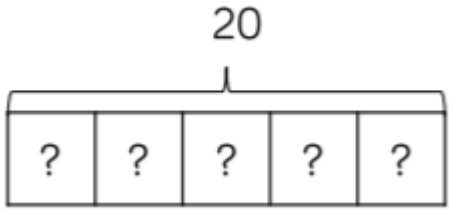
Division – Year One

National Curriculum 2014 Statutory Requirements.

- Solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Vocabulary:

Share, share equally, one each, two each…, group, groups of, lots of, array.

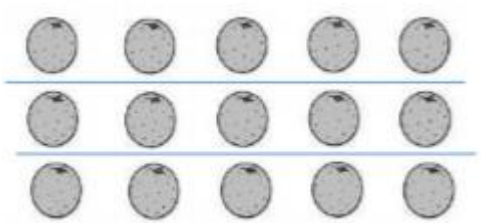
<table>
<tr><th>Skill</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr><td rowspan="2">Sharing objects into equal groups Focus on terminology of equal groups.</td><td> 
</td><td> 
</td><td rowspan="2">12 shared between 3 is
4
Share 9 buns between three people.
9 ÷ 3 = 3</td></tr>
<tr><td>Use a range of objects/resources to share. . Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</td><td>Represent the sharing pictorially Represent a whole and work out how many equal groups</td></tr>
<tr><td rowspan="2">Grouping</td><td>Sort a whole set people and objects into equal groups.
 
There are 10 children altogether.
There are 2 in each group.
There are 5 groups.</td><td> 
</td><td rowspan="2">28 ÷ 7 = 4
Divide 28 into 7 groups. How many are in each group?</td></tr>
<tr><td>Learn to make equal groups from a whole and find how many equal groups of a certain size can be made.</td><td>. 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.</td></tr>
</table>

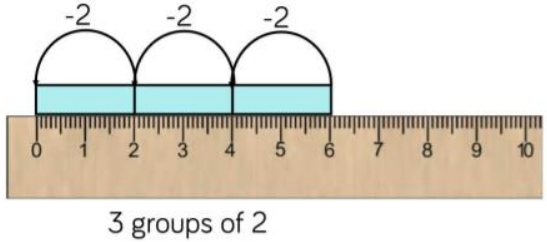
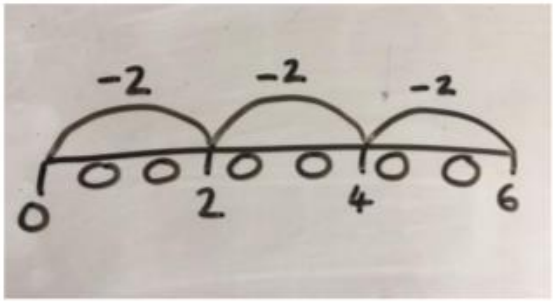
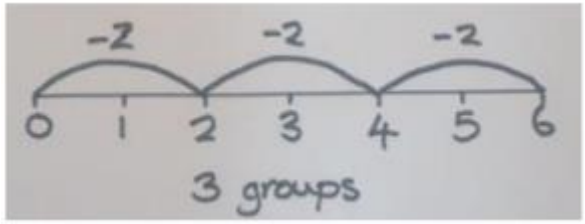
Division – Year Two

National Curriculum 2014 Statutory Requirements.

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables
- Recognising odd and even numbers
- Calculate mathematical statements for division within the multiplication tables and write them using the signs ÷ and =
- Show that multiplication of two numbers is commutative but division is not
- Solve problems involving division using materials, arrays, repeated addition, mental methods and division facts, including problems in contexts.

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.

Skill	Concrete	Pictorial	Abstract
Division within arrays – linking to multiplication.	 E.g. 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15		7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7
	Children link division to multiplication by creating an array and thinking about the number sentences that can be created.	Children draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences.

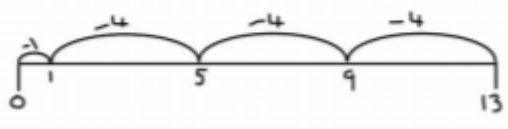
Repeated subtraction			
	Children use repeated subtraction using base 10 above a ruler/number lines.	Children represent repeated subtraction pictorially.	Abstract number line to represent the equal groups that have been subtracted.

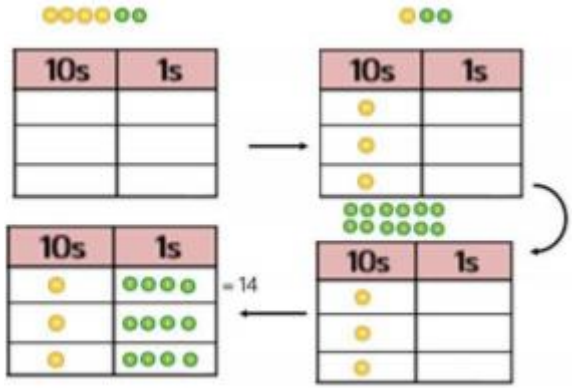
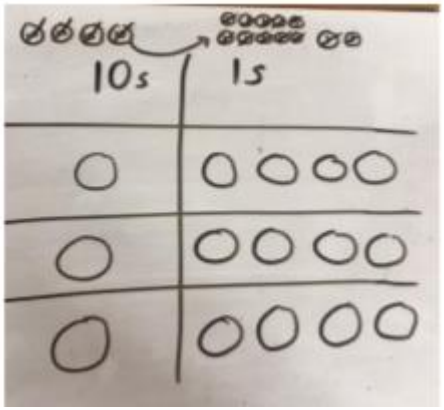
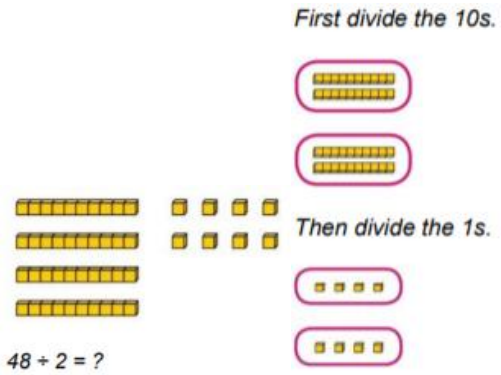
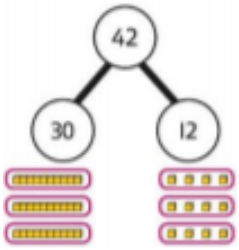
Division – Year Three

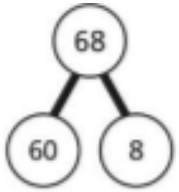
National Curriculum 2014 Statutory Requirements.

- Recall and use multiplication and division facts for the 3, 4, 8 and 9x tables.
- Write and calculate mathematical statements for division using the multiplication tables they know, including 2-digit divided by 1-digit using mental and progressing to formal written methods
- Solve problems, involving missing number problems, division, including positive number scaling problems and correspondence problems where n objects are connected to m objects.

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.

Skill	Concrete	Pictorial	Abstract
Remainders **Introduce in Year 3 due to being taught in Year 4.**	Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.  There are 3 whole squares, with 1 left over.	 There are 3 whole squares, with 1 left over.	'3 groups of 4, with 1 left over' 
	Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further.	Use images to explain remainders.	Understand that the remainder is what cannot be shared equally from a set. Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line.

<table>
<tr>
<td rowspan="2">Division by sharing into equal groups to support short division.</td>
<td> 
</td>
<td> 
</td>
<td>42 ÷ 3
42 = 30 + 12
30 ÷ 3 = 10
12 ÷ 3 = 4
10 + 4 = 14</td>
</tr>
<tr>
<td>Use cubes, counters, objects or place value to aid understanding.</td>
<td>Continue to use bar modelling to aid solving division problems.</td>
<td>Children to be able to make sense of the place value counters and write calculations to show the process.</td>
</tr>
<tr>
<td rowspan="2">2-digit number divided by 1 digit number, no remainders and no exchange.</td>
<td> 
</td>
<td> 

42 = 30 + 12
42 ÷ 3 = 14</td>
<td> 

60 ÷ 2 = 30
8 ÷ 2 = 4
30 + 4 = 34
68 ÷ 2 = 34</td>
</tr>
<tr>
<td>Use place value equipment to understand how to divide by unitising.</td>
<td>Children explore which partitions support particular divisions.</td>
<td>Children partition a number into 10s and 1s to divide where appropriate.</td>
</tr>
</table>

2-digit number divided by 1 digit number, with exchange and remainders **Children divide 2-digit numbers by a 1-digit number by partitioning into tens and ones and sharing into equal groups.**	*Make 29 from place value equipment.* *Share it into 2 equal groups.*  *There are two groups of 14 and 1 remainder.*	*29 ÷ 2 = ?*  *29 ÷ 2 = 14 remainder 1*	*67 children try to make 5 equal lines.* *67 = 50 + 17* *50 ÷ 5 = 10* *17 ÷ 5 = 3 remainder 2* *67 ÷ 5 = 13 remainder 2* *There are 13 children in each line and 2 children left out.*
	Use place value equipment to understand the concept of remainder.	Use place value equipment to understand the concept of remainder in division.	Partition to divide, understanding the remainder in context.

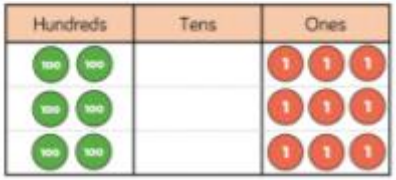
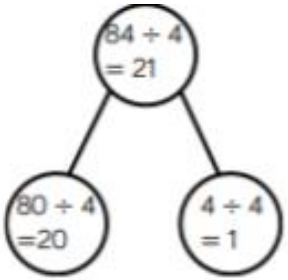
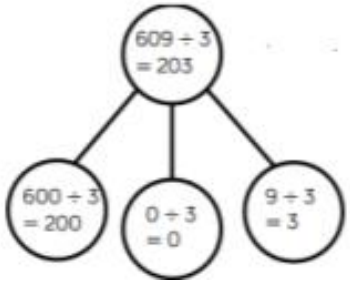
Division – Year Four

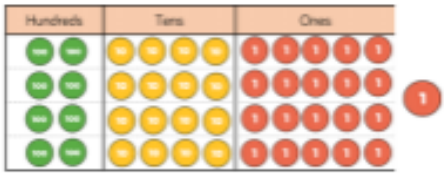
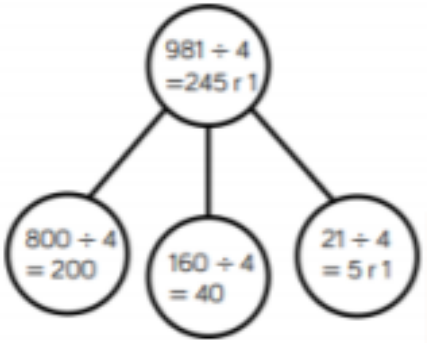
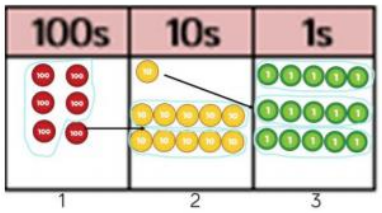
National Curriculum 2014 Statutory Requirements.

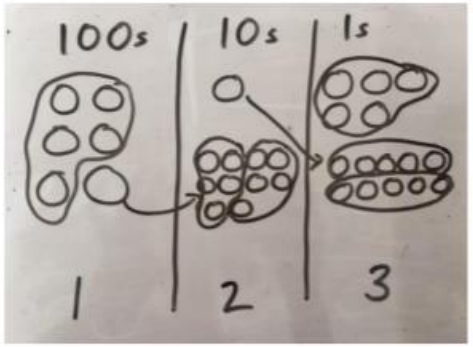
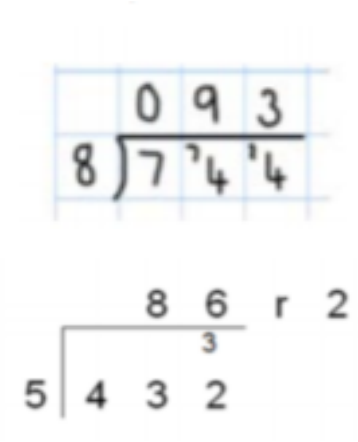
- Recall multiplication and division facts up to 12 x 12.
- Use place value, known and derived facts to divide mentally, including dividing by 1.
- Solve problems involving dividing a three-digit number by one-digit and number using a formal layout.

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

Skill	Concrete	Pictorial	Abstract
Partitioning to support division of dividing 2 and 3 digit numbers by 1 digit numbers (no remainders)	84 ÷ 4  609 ÷ 3  Use of place value counters and base 10 to support partitioning and sharing into equal groups.	  	84 ÷ 4 = 21 80 ÷ 4 = 20 4 ÷ 4 = 1 ➔ 20 + 1 = 21 609 ÷ 3 = 203 600 ÷ 3 = 200 0 ÷ 3 = 0 9 ÷ 3 = 3 ➔ 200 + 0 + 3 = 203

<table>
<tr>
<td rowspan="2">Partitioning to support division of dividing 2 and 3 digit numbers by 1 digit numbers (with remainders)</td>
<td>981 ÷ 4
 
</td>
<td rowspan="2"> 
</td>
<td rowspan="2">981 ÷ 4 = 245 r 1
800 ÷ 4 = 200
160 ÷ 4 = 40
21 ÷ 4 = 5 r 1
➔ 200 + 40 + 5 r 1 = 245 r1</td>
</tr>
<tr>
<td>Use of place value counters and base 10 to support partitioning and sharing into equal groups.</td>
</tr>
<tr>
<td rowspan="2">Divide up to 3 digit numbers by 1 digit.
Short division
Introduce in Year 4 due to being taught in Year 5</td>
<td>615 ÷ 5
 

1. Make 615 with place value counters.
2. How many groups of 5 hundreds can you make with 6 hundred counters?
3. Exchange 1 hundred for 10 tens.
4. How many groups of 5 tens can you make with 11 ten counters?
5. Exchange 1 ten for 10 ones.
6. How many groups of 5 ones can you make with 15 ones?</td>
<td> 
</td>
<td> 
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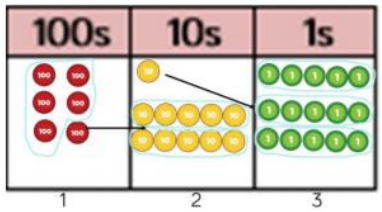
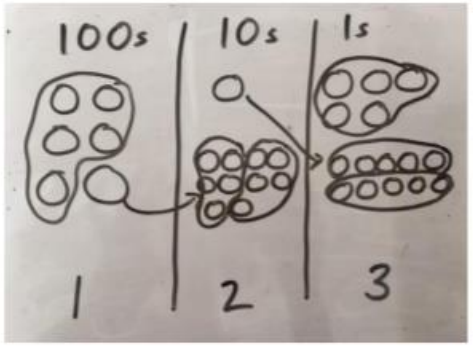
</tr>
<tr>
<td>Short division using place value counters to group.</td>
<td>Represent the place value counters pictorially.</td>
<td>Children to the calculation using the short division scaffold.</td>
</tr>
</table>

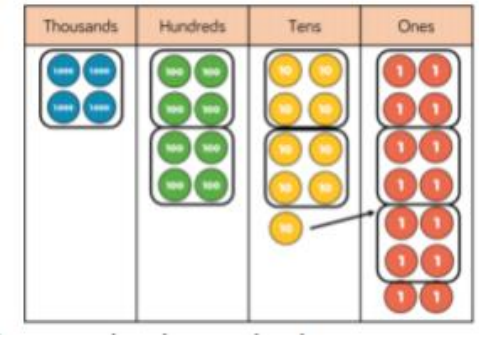
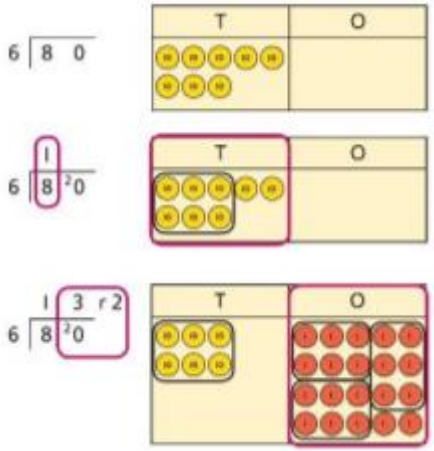
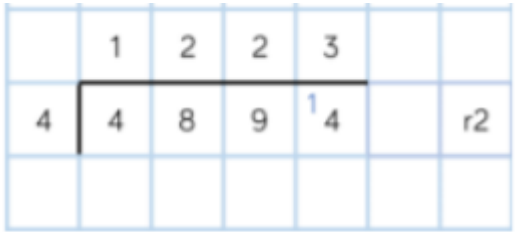
Division – Year Five

National Curriculum 2014 Statutory Requirements.

- Identify multiples and factors, including:
  - finding all factor pairs of a number
  - common factors of two numbers
  - know and use the vocabulary of prime numbers and establish whether a number up to 100 is prime.
- Multiply and divide numbers mentally drawing on known facts.
- Divide numbers up to 4 digits by a one-digit number using a written method and interpret remainders appropriately for the context.
- Divide whole numbers and those involving decimals by 10, 100 and 1000.

Vocabulary:
hare, 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.

Skill	Concrete	Pictorial	Abstract
Short division – division of up to 4-digit numbers by 1 digit numbers (no remainders). **Children use their knowledge from Year 4 of dividing 3-digits numbers by a 1-digit number to divide up to 4-digit numbers by a 1-digit number.**	615 ÷ 5  1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 15 ones?	 	$5\overline{)615}$ → 123
	As seen in Year 4. Short division using place value counters to group.	**As seen in Year 4.** Represent the place value counters pictorially.	**As seen in Year 4.** Children to the calculation using the short division scaffold.

Short division – division of up to 4-digit numbers by 1 digit numbers (with remainders). **They start to focus on remainders and build on their learning from Year 4 to understand remainders in context. They do not represent their remainder as a fraction at this point.**	4894 ÷ 4 = 1223 r 2 		
	Short division using place value counters to group.	Represent the place value counters pictorially.	Children to the calculation using the short division scaffold.

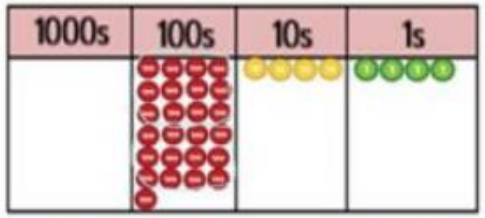
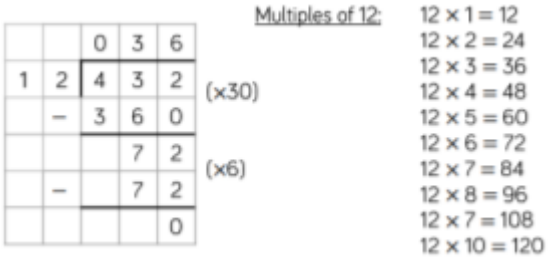
Division – Year Six

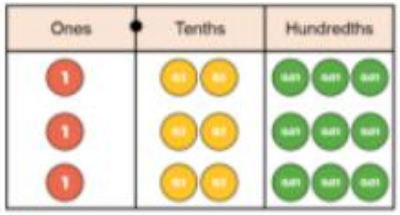
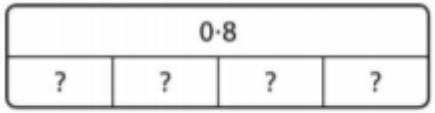
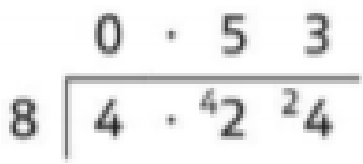
National Curriculum 2014 Statutory Requirements.

- Divide numbers up to 4 digits by a two-digit number using the formal written method of long division.
- Interpret remainders as whole number remainders, fractions, or by rounding as appropriate for the context.
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division as appropriate.

Vocabulary:

hare, 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.

Skill	Concrete	Pictorial	Abstract
Long division – division of up to 4 digit numbers by 2 digit numbers. Calculations with and without remainders.	2544 ÷ 12  We cannot group 2 thousands into groups of 12, so we exchange them  We can group 24 hundreds into groups of 12, which leaves us with 1 hundred.	Children to draw counters, as in examples for short division. Exchanges to be completed pictorially.	  If the remainder is ¾, children are to relate this to their knowledge of decimals. E.g. the equivalent remainder is 0.75.

Division of decimal numbers by integers.	3.69 ÷ 3 = 1.23  Children to circle groups to support understanding.	 4 × 2 = 8 8 ÷ 4 = 2 So, 4 × 0·2 = 0·8 0·8 ÷ 4 = 0·2	
	Use place value equipment to explore division of decimals.	Use a bar model to represent divisions. Use of the part-whole model to sup Emphasis on place value and correct vocabulary – e.g. 2 tenths not 2. port partitioning.	Use short division to divide decimals with up to 2 decimal places.