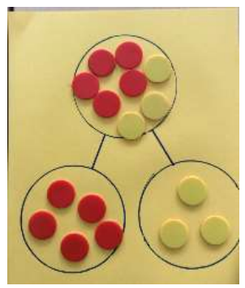
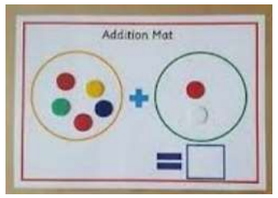
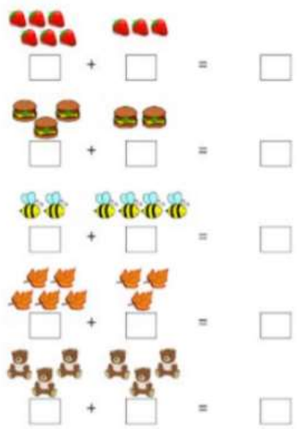
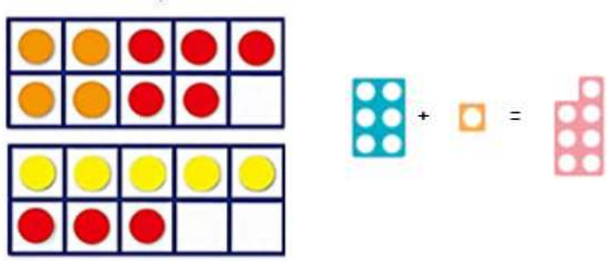
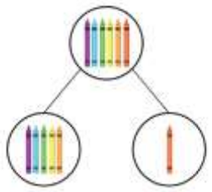
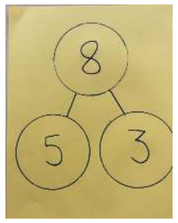
Deeping St James Community Primary Calculation Policy – Addition

EYFS

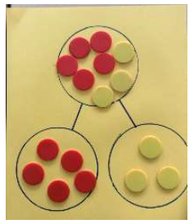
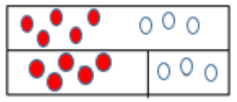
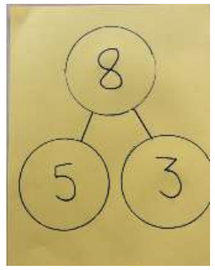
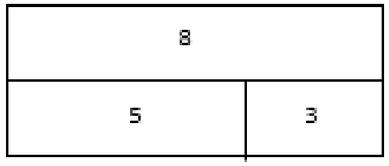
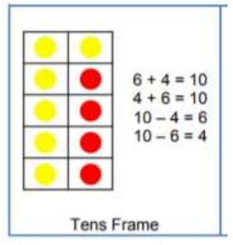
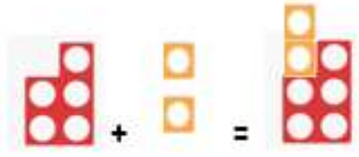
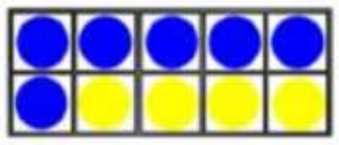
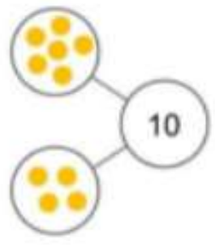
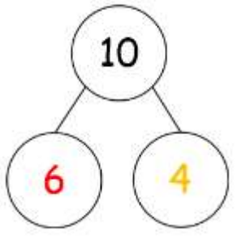
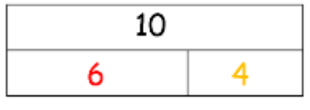
Key Vocabulary: add, more, sum, make, total, How much more is…? one more, altogether

Objective & Strategy	Concrete	Pictorial	Abstract
- Knows that a group of things change in quantity when something is added. - Find the total number of items in two groups by counting all of them. - Says the number that is one more than a given number. - Finds one more from a group of up to five objects, then ten objects. - In practical activities and discussion, beginning to use the vocabulary involved in adding. - Using quantities and objects, they add two single digit numbers and count on to find the answer. - Solve problems including doubling.	   Use toys and general classroom resources for children to physically manipulate, group/regroup.  Use specific maths resources such as counters, cubes, Numicon, base 10, bead strings etc.  Use visual supports such as ten frames, part part whole and addition mats, with the physical objects and resources that can be manipulated.   	 Two groups of pictures so children are able to count the total.  Use visual supports such as ten frames, part part whole and number lines.   	A focus on symbols and numbers to form a calculation. **5 + 3 = 8** **3 + 5 = 8** **8 = 5 + 3** **8 = 3 + 5**

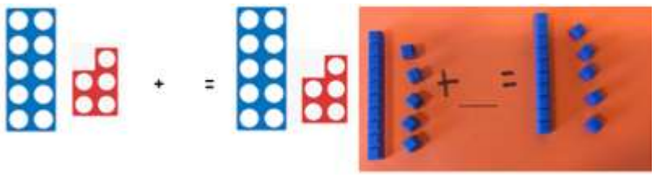
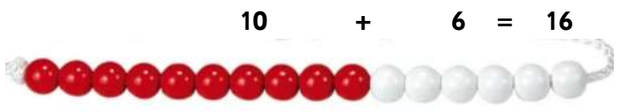
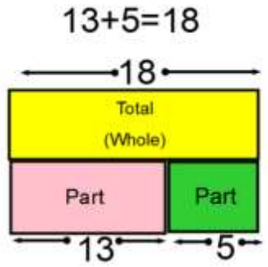
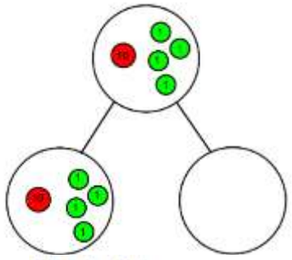
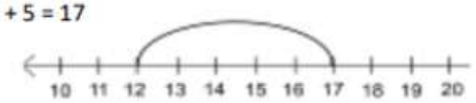
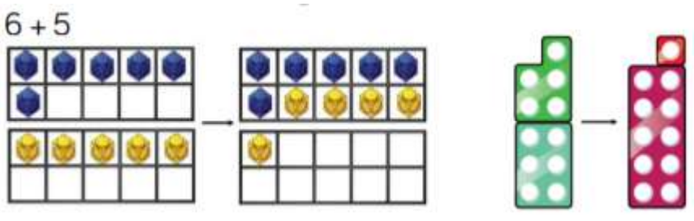
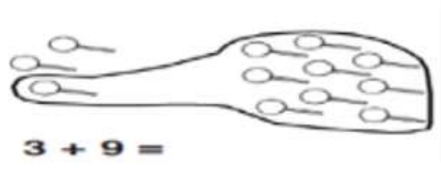
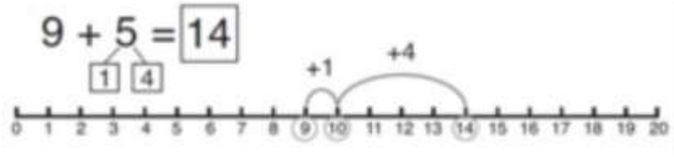
Deeping St James Community Primary Calculation Policy – Addition

Year 1

Key Vocabulary: add, more, sum, make, total, How much more is…? one more, altogether, plus, altogether, more than, put together, and, most, count on, double, equal, equal to, number line

Objective & Strategy	Concrete	Pictorial	Abstract
-To add 2 single digit numbers.	 Use cubes to add two numbers together as a group or in a bar. (Some children may still need to use real objects.)   Use part-part whole model with concrete apparatus. Use bead strings to count on.	  Use pictorial representations to add two single digits to find the whole. Use a number line to add two single digits by counting on.	Record as a written calculation. **5 + 3 = 8** **3 + 5 = 8** **8 = 5 + 3** **8 = 3 + 5**
-Represent and use number bonds and related subtraction facts within 20	    Use of real objects, counters, cubes, numicon and bead strings.	    Use pictorial representations to show related number facts.	Understand as a written calculation. **6 + 4 = 10** **4 + 6 = 10** **10 – 6 = 4** **10 – 4 = 6** Emphasis should be on the language: *'1 more than 5 is equal to 6'* *'2 more than 5 is 7'* *'8 is 3 more than 5'*

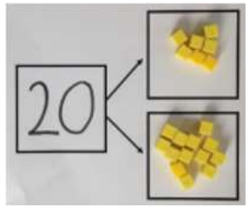
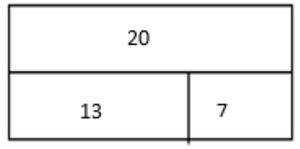
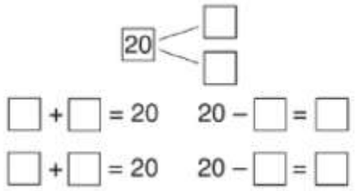
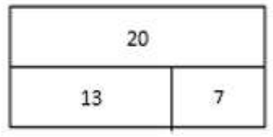
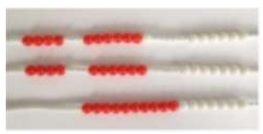
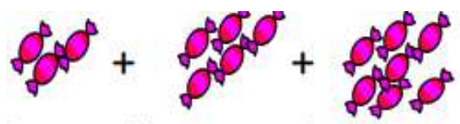
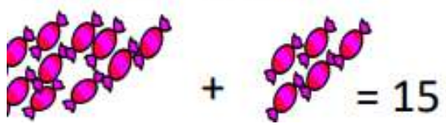
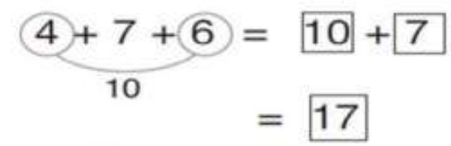
Deeping St James Community Primary Calculation Policy – Addition

-To add a one digit and two-digit number to 20, including zero.	**5 + 13 = 18**  **15 + 0 = 15**  **10 + 6 = 16**  Use physical objects, numicon, base 10, bead strings etc to add one-digit and two-digit numbers to find a whole.	 Use of bar models to represent the addition calculation. **15 + 0 = 15** Use of part- part whole models to represent the addition calculation.   Use of number lines to start at largest number and count on.	Record as a written calculation **13 + 5 = 18** **5 + 13 = 18** **18 = 5 + 13** **18 = 13 + 5** Record as a written calculation **15 + 0 = 15** **0 + 15 = 15** **15 = 0 + 15** **15 = 15 + 0** Record as a written calculation **12 + 5 = 17** **5 + 12 = 17** **17 = 12 + 5** **17 = 5 + 12**
-To regroup to make 10.	 Use tens frames, cubes and numicon to regroup to make 10. Start with the bigger number and use the smaller number to make 10.	 Use pictures or number lines. Regroup or partition the smaller number using knowledge of part-part whole model to make 10.  	Record as a written calculation: **7 + 4 = 11** *If I am at seven, how many more do I need to make 10?* *How many more do I need now to make it to 11?*

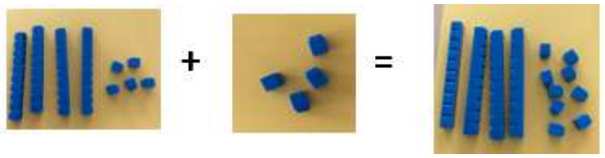
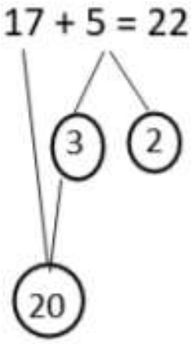
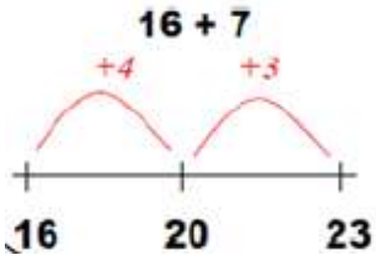
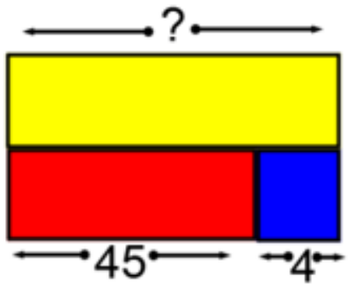
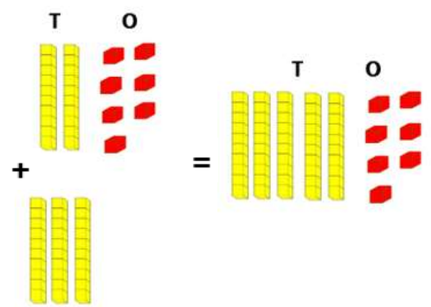
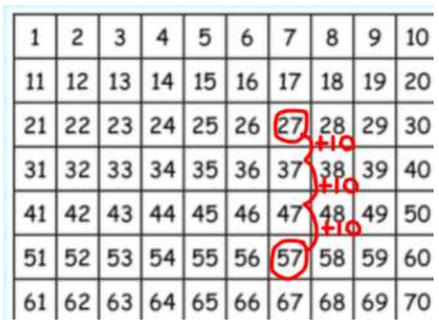
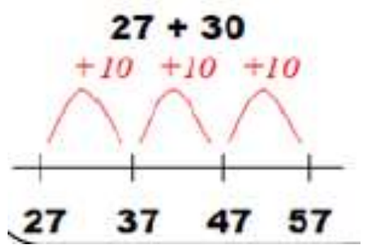
Deeping St James Community Primary Calculation Policy – Addition

Year 2

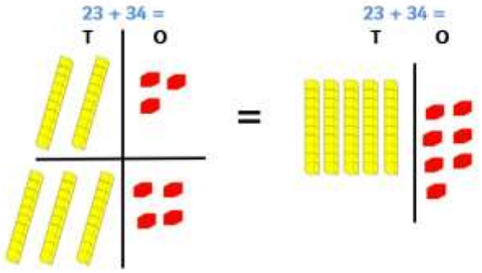
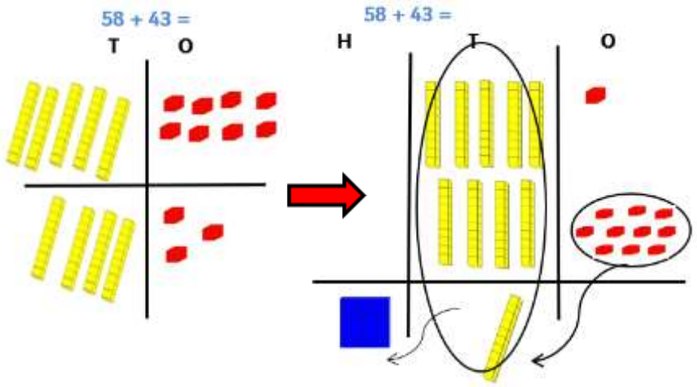
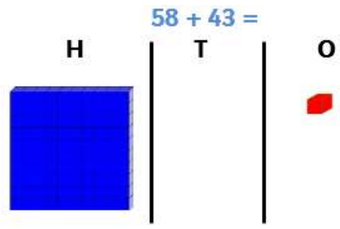
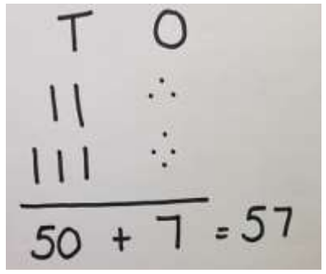
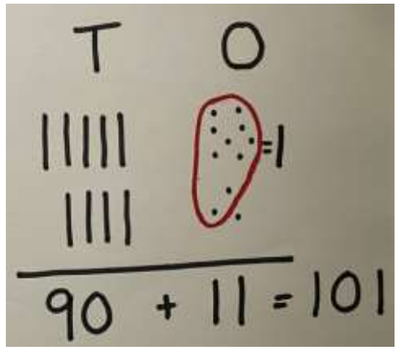
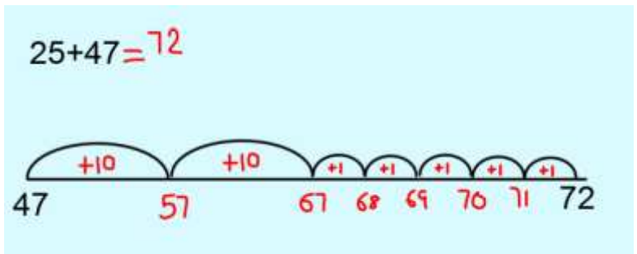
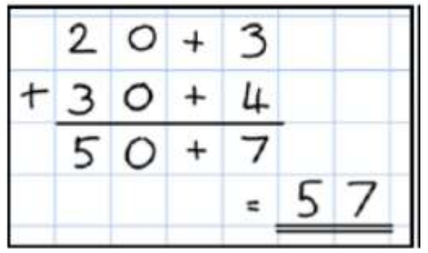
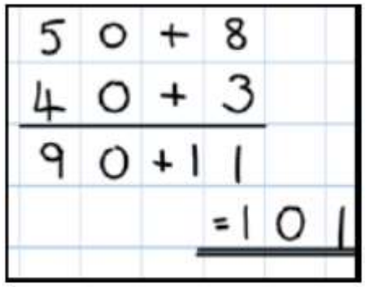
Key Vocabulary: add, plus, more, altogether, more than, put together, and, make, total, most, count on, double, equal, equal to, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, inverse, digits, commutative law

Objective & Strategy	Concrete	Pictorial	Abstract
-To recall and use addition facts to 20 fluently	Use concrete apparatus to represent each part of calculation: cubes, base 10, place value counters etc. Then use this to show related addition facts.   Part- part whole models and bars can be used to support this.	Use pictorial representatives to explore addition facts to 20. Children begin to showing their understanding by representing using numbers.   	Record as a written calculation **? + 1 = 20** **1 + ? = 20** Understand the term commutative for addition **20 – 1 = ?** **20 – ? = 1**
-To derive and use related facts up to 100.	Use concrete appartus (base 10/place value counters) to show mathematical facts up to 100. For example: 3 + 3 = 6  So.. 30 + 30 = 60 	Use pictorial representations to show mathematical related facts. Children show their thinking using jottings to record their mathematical calculations. 3 + 3 =6  30 + 30 = 60  300+300 = 600 	Record as a written calculation **3 + 4 = 7** **leads to…** **30 + 40 = 70** **leads to…** **300 + 400 = 700**
-To add 3 one-digit numbers.	Use concrete apparatus (bead strings/cubes/base 10) to add three single digit numbers.  **4 + 7 + 6 = 17** Put 4 + 6 together to make 10. Add on 7.  **7 + 2 + 3** Combine to make 10 first if possible, or bridge 10 then add the third digit.	Use pictorial representations to add three single digit numbers. Children find the numbers that make 10 to aid the adding skills.  Regroup and draw representation.  	Record as a written calculation Children are encouraged to add the numbers that make ten before adding the final number.  Combine the two numbers that make/ bridge ten then add on the third.

Deeping St James Community Primary Calculation Policy – Addition

-To add 2-digit numbers and ones.	Use concrete apparatus (base 10/place value counters) to add a two-digit number and ones. Children would use equipment for example Dienes to help them show their mathematical thinking. **45 + 4 = 49** 	Use pictorial representatives to add two-digit number and ones to 100. **17 + 5 = 22**  **16 + 7**   Part-part whole, number lines & bar models.	Record as a written calculation **45 + 4 = 49** Explore related facts **45 + 4 = 49** **4 + 45 = 49** (Understand the term commutative for addition) **49 – 45 = 4** **49 – 4 = 45**
-To add 2-digit numbers and tens.	Use concrete apparatus (base 10/place value counters) to add a two-digit number and tens. Children represent the calculation using base 10 or place value grids and counters. When finding totals, they add the ones first, then the tens to find the whole. **27 + 30 = 57**  	Use pictorial representations to add two-digit number and tens. **<u>Using a 100 Square</u>** Children circle the non-multiple of 10 then add the multiples of 10 by jumping down the hundred square.  **<u>Using a number line</u>** Start with the non-multiple of 10 and jump in tens. **27 + 30 = 57**  	Record as a written calculation, including missing box questions. **27 + 10 = 37** **27 + 20 = 47** **27 + ? = 57**

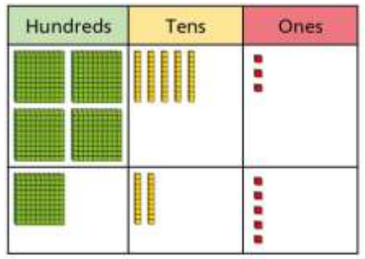
Deeping St James Community Primary Calculation Policy – Addition

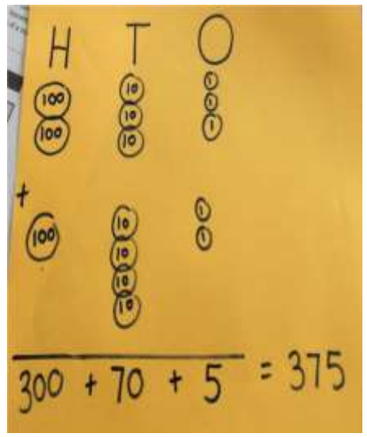
-To add two 2-digit numbers to 100 (including bridging).	Children will continue to organise calculations using concrete resources (base 10/place value counters) to make sense of the calculation. **Step 1**: (Not crossing tens boundary)  **Step 2**: (Bridging)  Once all exchanges are complete we see:  When children bridge through 10, they will need to exchange 10 ones for 1 ten.	Use pictorial representations to add two 2-digit number to 100. **Step 1**: (Not crossing tens boundary)  **Step 2**: (Bridging)  **Using a number line** Start with the largest number and partition the second. Add the tens first then the ones. It is important that the children record their workings underneath. To find the answer, children count the numbers inside each jump.  	Record as written calculation using digits. **Step 1**: (Not crossing tens boundary)  **Step 2**: (Bridging) 

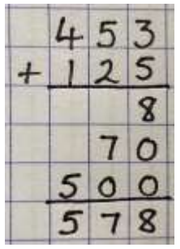
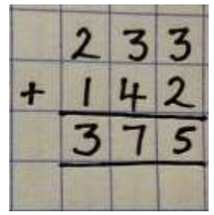
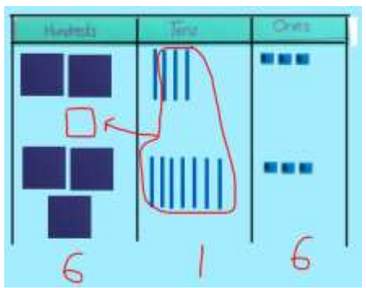
Deeping St James Community Primary Calculation Policy – Addition

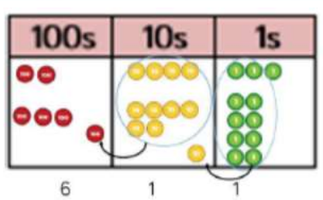
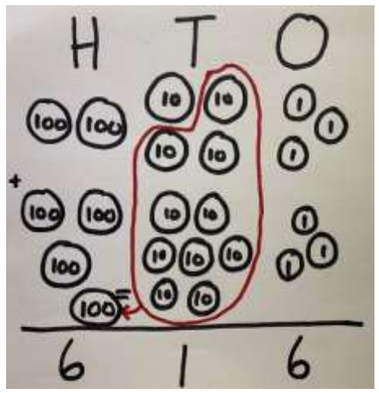
Year 3

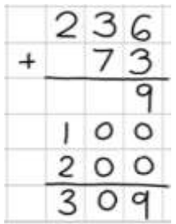
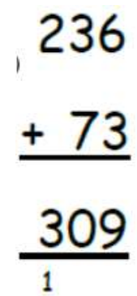
Key Vocabulary: add, plus, more, altogether, more than, put together, and, make, total, most, count on, double, equal, equal to, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, hundreds, inverse, digits, commutative law, increase, vertical, 'carry', expanded, compact

<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>-To add numbers up to 3 digits, using formal written methods- no regrouping.</td>
<td>Use concrete apparatus (base 10/place value counters) to add numbers up to 3 digits using a formal method.
453 + 125 = 578
 

Add the ones first then the tens, followed by the hundreds.
Ensure concrete apparatus is in correct place value column – use of place value frames.
502 + 314 = 816
 
</td>
<td>Use pictorial representations to add numbers up to 3 digits e.g. jottings.
233 + 142 = 375
 

Pictorial representations may be in the form of base 10 too.</td>
<td>Written method:
Expanded column addition:
 
Progressing to Formal Column Addition:
  </td>
</tr>
<tr>
<td>-To add numbers up to 3 digits, using formal written methods, with regrouping.</td>
<td>Use concrete apparatus (base 10/place value counters) to add numbers up to 3 digits using a formal method.
243 + 373 = 616
 

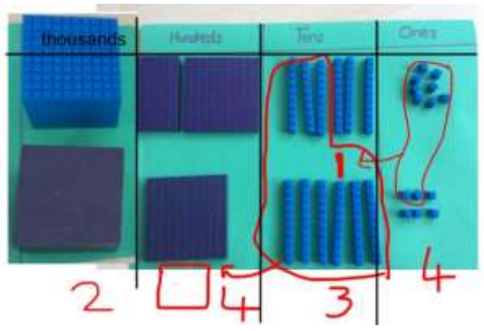
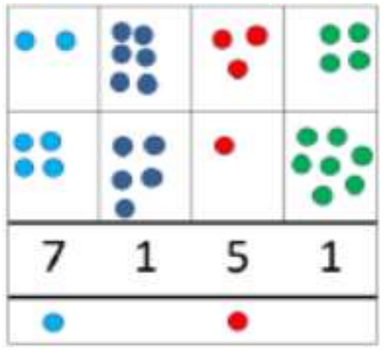
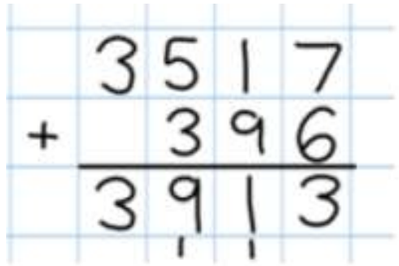
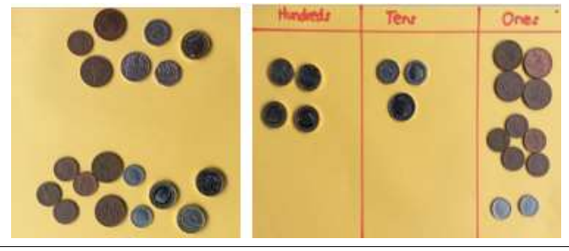
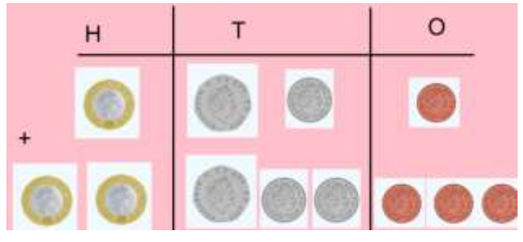
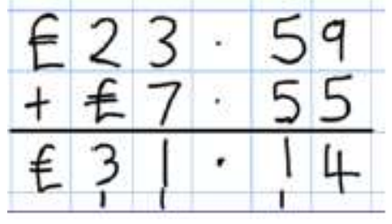
243 + 368 = 611
 
</td>
<td>Use pictorial representations to add numbers up to 3 digits e.g. jottings.
 

Pictorial representations may be in the form of base 10 too.</td>
<td>Written method:
Continue to us Expanded column addition until secure:
 
Progressing to Formal Column Addition:
Carry below the line when bridging.
  </td>
</tr>
</table>

Deeping St James Community Primary Calculation Policy – Addition

Year 4

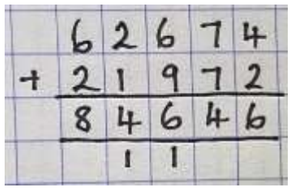
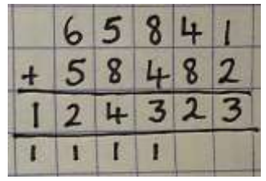
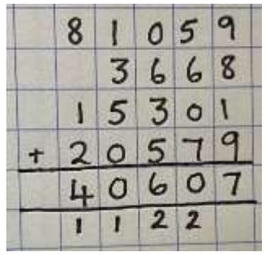
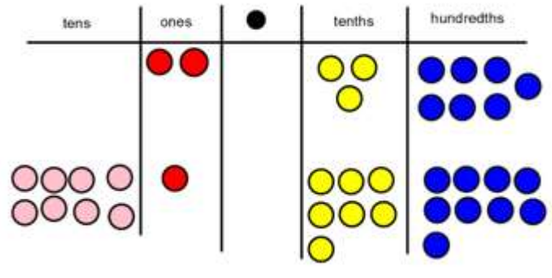
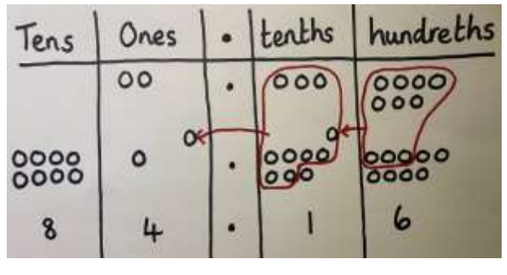
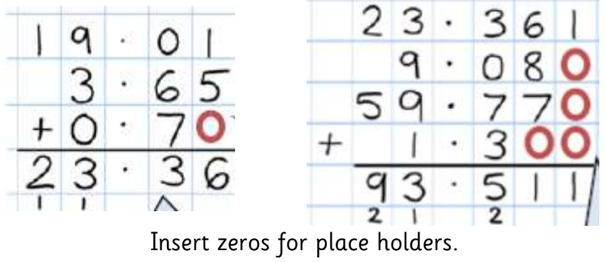
Key Vocabulary: add, plus, more, altogether, more than, put together, and, make, total, most, count on, double, equal, equal to, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, inverse, digits, hundreds, commutative law, increase, vertical, 'carry', expanded, compact, thousands

Objective & Strategy	Concrete	Pictorial	Abstract
Pupils should be using formal written methods of column addition where appropriate. -To add numbers with up to 4 digits.	Use concrete apparatus (base 10/place value counters) to add numbers up to 4 digits using a formal method. Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten and ten 10s for a hundred and ten 100s for a thousand. Children begin to understand multi exchange where exchange is needed in more than one column. 1268 + 1166 = 2434 	Use pictorial representations to add numbers up to 4 digits. Children will use images to represent the place value. If exchanging is needed, this will be shown below the line. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents. 2634 + 4517 = 7151  The blue dot represents 1000 and the red dot represents 100.	Record as a written calculation Formal column addition Carry below the line 3517 + 396 = 3913  Continue using compact method with two 4-digit numbers.
-To solve simple measure and money problems up to two decimal places.	Use physical objects to solve simple measure and money problems. Children will gather then organise the amount required. Using the place value chart, children will then solve the calculation. £1.55 + £3.18 = £4.73 	Use pictorial representations to solve simple measure and money problems. Using pictorial representations of money, children to solve up additions involving numbers with up to two decimal places. £1.31 + £2.43 = £3.74 	Record as a written calculation Formal column addition Children should line the decimals correctly under one another, considering place value. 

Deeping St James Community Primary Calculation Policy – Addition

Years 5 & 6

Key Vocabulary: add, plus, more, altogether, more than, put together, and, make, total, most, count on, double, equal, equal to, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, inverse, digits, commutative law, hundreds, increase, vertical, 'carry', expanded, compact, decimal places, decimal point, tenths, hundredths, thousandths, integer

Objective & Strategy	Concrete	Pictorial	Abstract
At this stage pupils should be encouraged to work in the abstract using the formal column method to add larger numbers efficiently. -To add numbers with more than 4 digits. (Y5) -To add several numbers of increasing complexity. (Y6)	**See Year 4**	**See Year 4**	(Children can have abstract supported by a pictorial or concrete if required.) Record as a written calculation Formal column addition Children to solve calculation involving multiple exchanges.    Reinforce the correct use of place value and carrying numbers below the line.
-To add numbers with up to two decimal places. (Y5) -To add numbers with increasing complexity, including adding money, measure. (Y6)	Use concrete apparatus and place value charts (place value counters/coloured cubes or counters) to add numbers with up to two decimal places and increasing complexity. 2.37 + 81.79 = 84.16  	Use pictorial representations. Children will use jottings to help them represent the calculation. They add each column starting first from the furthest column to the right and carry below the line when needed. 2.37 + 81.79 = 84.16  	Record as a written calculation Formal column addition Children should line decimals up correctly, including examples when there are different number of decimal places.  Insert zeros for place holders.