Tilstock Calculation Policy Addition KS2

<table>
<tr><td>KS1</td><td colspan="5">Pupils should practise addition to 20 and within to become increasingly fluent. They should use the facts they know to derive others, e.g using 7 + 3 = 10 to find 17 + 3= 20, 70 + 30 = 100
They should use concrete objects and practical apparatus, such as bead strings and number lines to explore additions including missing numbers.
Use pictorial representations such as bar models and whole part diagrams to show additive relationships.
100 squares could be used to explore patterns in calculations such as 74 +11, 77 + 9 encouraging children to think about ‘What do you notice?’ where partitioning or adjusting is used.

Pupils should learn to check their calculations, by using the inverse.
They should continue to see addition as both combining groups and counting on.
They should use Dienes to model partitioning into tens and ones* and learn to rearrange numbers in different ways e.g. 23 = 20 + 3 = 10 + 13.
Show understanding that adding zero leaves a number unchanged.</td></tr>
<tr><td>Year</td><td colspan="3">3</td><td colspan="2">4</td></tr>
<tr><td>Layers of vocabulary

Appendix 1a Beck’s Tiers of Vocabulary
Appendix 1b: Vocabulary book</td><td colspan="3">Basic to subject specific (Beck’s Tiers):
+, add, addition, more, plus make, sum, total altogether score 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…?

Instructional vocabulary:
explain your method explain how you got your answer give an example of… show how you… show your working</td><td colspan="2">Basic to subject specific (Beck’s Tiers):
add, addition, more, plus, increase sum, total, altogether score double, near double how many more to make…?

Instructional vocabulary:
calculate, work out, solve investigate, question answer check</td></tr>
<tr><td>NC 2014</td><td colspan="3">Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.</td><td colspan="2">Add and subtract numbers with up to 4 digits using the formal written method of columnar addition and subtraction where appropriate. Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</td></tr>
<tr><td>Developing Conceptual/ Procedural Understanding</td><td>Near doubles
13+14 =
Double 13= 26
26+1 =27
or
Double 14 =28
28-1=27
Using known facts
40 + 80 = 120 using 4 + 8 = 12
So 400 + 800 = 1200</td><td>Start with least significant digit
67
+ 24
11 (7+4)
+ 80 (60+20)
91

“7 add 4 equals 11 and 60 add 20 equals 80. 1+ 0 = 1 and 1 ten + 8 tens = 9 tens”</td><td>Columnar addition
625
+ 48
673
1

Teach the carried digit.</td><td>Using known facts
40 + 80 = 120 using 4 + 8 = 12
So 400 + 800 = 1200 and 4000+8000=12,000

Remodelling strategy
3548 + 1998
3546 + 2000 = 5546

Place value materials to represent calculations</td><td>Columnar addition
587
+ 475
1062
1 1
“7 add 5 equals 12. That’s 2 units and 1 ten to carry over. 80 add 70 equals 150 and the1 ten to carry makes 160. That’s 6 tens and 100 to carry over. 500 add 400 equals 900 and the 1 hundred to</td><td>Columnar addition (decimals) in contexts such as money and measurement
12.45
7.36
+ 24.50
44.31
1 1 1

Representing problems
There are 259 more boys than girls in Lucy’s school. If there are 759</td></tr>
</table>

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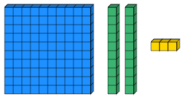
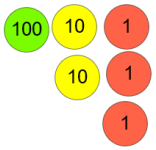
<table>
<tr>
<td></td>
<td>Remodelling strategy
243 + 198
241 + 200 = 441

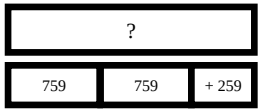
Place value materials to represent 3 digit numbers
Base 10 and then place value counters.
 
 
</td>
<td>

625
+ 48
13 (5+8)
60 (20 + 40)
+600 (600 + 0)
673

All language in the context of the place value and the mental addition of the totals to be done in any order.

Teaching point: no more than 9 in any given column following regrouping.</td>
<td>Representing problems
There are 334 children at Springfield School and 75 at Oak Nursery. How many children are there altogether?</td>
<td></td>
<td>carry makes 1000”

7648
+1486
14 (8+6)
120 (40+80)
1000 (600+400)
+ 8000 (7000+1000)
9134

7648
+ 1486
9134
111</td>
<td>girls, how many pupils are there altogether?
 
</td>
</tr>
<tr>
<td>Known facts</td>
<td colspan="2">Derive and use addition and subtraction facts to 100, e.g. 33+ 67 =100.</td>
<td colspan="3">Derive and use addition and subtraction facts (for multiples of 10) to 1000, e.g. 330+ 670=1000.</td>
</tr>
<tr>
<td rowspan="4">Essential knowledge</td>
<td>Add single digit bridging through boundaries</td>
<td>Add multiples of 10,100</td>
<td>Fluency of 2 digit + 2 digit</td>
<td colspan="2">Add multiples of 10, 100 and 1000</td>
</tr>
<tr>
<td>Partition second number to add</td>
<td>Pairs of 100 (complements of 100)</td>
<td>Partition second number to add</td>
<td colspan="2">Decimal pairs of 10 and 1</td>
</tr>
<tr>
<td>Use near doubles to add</td>
<td>Add near multiples of 10 and 100 by rounding and adjusting</td>
<td>Use near doubles to add</td>
<td colspan="2">Adjust both numbers before adding</td>
</tr>
<tr>
<td>Partition and recombine</td>
<td></td>
<td>Add near multiples</td>
<td colspan="2">Partition and recombine</td>
</tr>
</table>

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<table>
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Beck's Tiers of Vocabulary
Appendix 1b:
Vocabulary book</td><td colspan="2">Basic to subject specific (Beck's Tiers):
add, addition, more, plus, increase sum, total, altogether score double, near double how many more to make…?

Instructional vocabulary:
put, place arrange, rearrange change, change over split, separate</td><td colspan="2">Basic to subject specific (Beck's Tiers):
add, addition, more, plus, increase sum, total, altogether score double, near double how many more to make…?

Instructional vocabulary:
put, place arrange, rearrange change, change over adjusting, adjust split, separate
carry on, continue, repeat what comes next? predict describe the pattern, describe the rule
find, find all, find different investigate</td></tr>
<tr><td>NC 2014</td><td colspan="2">Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).
Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</td><td colspan="2">Solve problems involving addition, subtraction, multiplication and division.</td></tr>
<tr><td>Developing Conceptual/ Procedural Understanding</td><td>Columnar addition
Include calculations involving more than 2 numbers and carrying figures >1.

25567
16397
+15984
57948
1 1 2 1

Include calculations with 'empty columns'.
124.9 + 7.25

124.90
+ 7.25
132.25
1 1</td><td>Representing problems
If 2541 is the answer, what's the question? - Can you create three addition calculations? - Can you create three subtraction calculations? - Did you use a strategy?</td><td>Columnar addition
Include calculations with up to 3 'empty columns'.
128.7 + 3.014

128.700
+3.014
131.714
1</td><td>Representing problems
7208 females attended a concert as well as 8963 males. There were originally 20000 seats on sale. How many empty seats were there at the concert?</td></tr>
<tr><td>Known facts</td><td colspan="2">Derive and use addition and subtraction facts to 10 and 1, e.g. 3.3+ 6.7 =10 and so 0.33 + 0.67 = 1.</td><td colspan="2">All the KS2 required facts</td></tr>
<tr><td rowspan="2">Essential knowledge</td><td>Fluency of 2 digit + 2 digit including with decimals</td><td>Add multiples of 10, 100, 1000 and tenths</td><td>Fluency of 2 digit + 2 digit including with decimals</td><td>Add multiples of 10, 100, 1000, tenths and hundredths</td></tr>
<tr><td>Partition second number to add</td><td>Use number facts, bridging</td><td>Partition second number to add</td><td>Use number facts, bridging</td></tr>
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		and place value		and place value
	Adjust numbers to add	Partition and recombine	Adjust numbers to add	Partition and recombine