Addition KS2

KS1	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.					
Year	3			4		
Layers of vocabulary **Appendix 1a** Beck's Tiers of Vocabulary **Appendix 1b:** Vocabulary book	**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			**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		
NC 2014	Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.			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.		
Developing Conceptual/ Procedural Understanding	**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	**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"	**Columnar addition** 625 + 48 673 1 **Teach the carried digit.**	**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**	**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 carry makes 1000"	**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 789 girls, how many pupils are there altogether?

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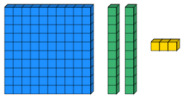
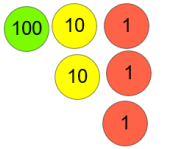
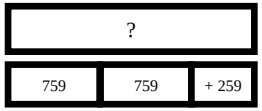
	Remodelling strategy 243 + 198 241 + 200 = 441 **Place value materials to represent 3 digit numbers** Base 10 and then place value counters.  	 625 + 48 13 (5+8) 60 (20 + 40) +600 (600 + 0) 673 **All language in the context of the place value and the mental addition of the totals to be done in any order.**	**Representing problems** There are 334 children at Springfield School and 75 at Oak Nursery. How many children are there altogether?		7648 +1486 14 (8+6) 120 (40+80) 1000 (600+400) + 8000 (7000+1000) 9134 7648 + 1486 9134 111	
Known facts	Derive and use addition and subtraction facts to 100, e.g. 33+ 67 =100.			Derive and use addition and subtraction facts (for multiples of 10) to 1000, e.g. 330+ 670=1000.		
Essential knowledge	Add single digit bridging through boundaries	Add multiples of 10,100		Fluency of 2 digit + 2 digit	Add multiples of 10, 100 and 1000	
	Partition second number to add	Pairs of 100 (complements of 100)		Partition second number to add	Decimal pairs of 10 and 1	
	Use near doubles to add	Add near multiples of 10 and 100 by rounding and adjusting		Use near doubles to add	Adjust both numbers before adding	
	Partition and recombine			Add near multiples	Partition and recombine	

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<table>
<tr><th>Year</th><th colspan="3">5</th><th colspan="3">6</th></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, 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="3">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="3">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="3">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 colspan="2">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 colspan="2">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="3">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="3">All the KS2 required facts</td></tr>
<tr><td rowspan="3">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></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 and place value</td><td></td><td>Partition second number to add</td><td>Use number facts, bridging and place value</td></tr>
<tr><td>Adjust numbers to add</td><td>Partition and recombine</td><td></td><td>Adjust numbers to add</td><td>Partition and recombine</td></tr>
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