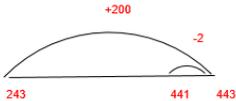
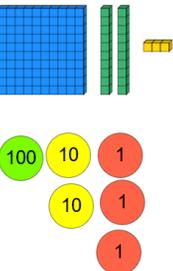
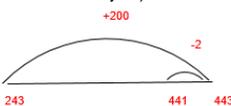




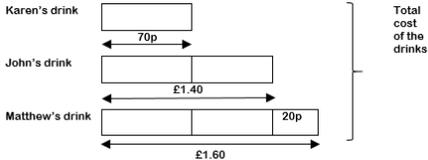
Addition KS2

<p>KS1</p>	<p>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 $17 + 3 = 20$, $70 + 30 = 100$</p> <p>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.</p> <p>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.</p> <p>Pupils should learn to check their calculations, by using the inverse.</p> <p>They should continue to see addition as both combining groups and counting on.</p> <p>They should use Dienes to model partitioning into tens and ones* and learn to rearrange numbers in different ways e.g. $23 = 20 + 3 = 10 + 13$.</p> <p>Show understanding that adding zero leaves a number unchanged.</p>						
<p>Year</p>		<p>3</p>			<p>4</p>		
<p>Layers of vocabulary</p>  <p>Appendix 1a Beck's Tiers of Vocabulary</p> <p>Appendix 1b: Vocabulary book</p>	<p>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...?</p> <p>Instructional vocabulary: explain your method explain how you got your answer give an example of... show how you... show your working</p>			<p>Basic to subject specific (Beck's Tiers): add, addition, more, plus, increase sum, total, altogether score double, near double how many more to make...?</p> <p>Instructional vocabulary: calculate, work out, solve investigate, question answer check</p>			
<p>NC 2014</p>	<p>Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.</p>			<p>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.</p>			
<p>Developing Conceptual/ Procedural Understanding</p>	<p>Near doubles $13+14 =$ Double $13 = 26$ $26+1 = 27$ or Double $14 = 28$ $28-1 = 27$</p> <p>Using known facts $40 + 80 = 120$ using $4 + 8 = 12$ So $400 + 800 = 1200$</p>	<p>Start with least significant digit 67 $+ 24$ 11 (7+4) $+ 80$ (60+20) 91</p> <p>"7 add 4 equals 11 and 60 add 20 equals 80. 1+ 0 = 1 and 1 ten + 8 tens = 9 tens"</p>	<p>Columnar addition 625 $+ 48$ 673 1</p> <p>Teach the carried digit.</p>	<p>Using known facts $40 + 80 = 120$ using $4 + 8 = 12$ So $400 + 800 = 1200$ and $4000+8000=12,000$</p> <p>Remodelling strategy $3548 + 1998$ $3546 + 2000 = 5546$</p>	<p>Columnar addition 587 $+ 475$ 1062 11</p> <p>"7 add 5 equals 12. That's 2 units and 1 ten to carry over. 80 add 70 equals 150 and the 1 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"</p>	<p>Columnar addition (decimals) in contexts such as money and measurement</p> <p>12.45 7.36 $+ 24.50$ 44.31 1 1 1</p> <p>NUMBER BOARDS</p>	

Addition KS2

<p>Remodelling strategy $243 + 198$ $241 + 200 = 441$</p> <p>Adjustment strategy $243 + 198$ by +200 then -2 (Round and adjust)</p>  <p>Place value materials to represent 3 digit numbers Base 10 and then place value counters.</p> 	  $\begin{array}{r} 625 \\ + 48 \\ \hline 13 \text{ (5+8)} \\ 60 \text{ (20 + 40)} \\ +600 \text{ (600 + 0)} \\ \hline 673 \end{array}$ <p>All language in the context of the place value and the mental addition of the totals to be done in any order.</p>	<p>Representing problems There are 334 children at Greenfield School and 75 at Madeley Nursery. How many children are there altogether?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: center;">?</td></tr> <tr><td style="text-align: center;">334</td><td style="text-align: center;">75</td></tr> </table>	?	334	75	<p>Adjustment strategy $243 + 198$ by +200 then -2 (Round and adjust)</p>  <p>Place value materials to represent calculations</p>	$\begin{array}{r} 7648 \\ +1486 \\ \hline 14 \text{ (8+6)} \\ 120 \text{ (40+80)} \\ 1000 \text{ (600+400)} \\ + 8000 \text{ (7000+1000)} \\ \hline 9134 \end{array}$ $\begin{array}{r} 7648 \\ + 1486 \\ \hline 9134 \\ 111 \end{array}$	<p>Representing problems There are 259 more boys than girls in Lucy's school. If there are 789 girls, how many pupils are there altogether?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: center;">789</td><td style="text-align: center;">789</td><td style="text-align: center;">259</td></tr> <tr><td style="text-align: center;">Number of girls</td><td colspan="2" style="text-align: center;">Number of children in the school</td></tr> <tr><td style="text-align: center;">Number of boys</td><td colspan="2"></td></tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: center;">?</td></tr> <tr><td style="text-align: center;">759</td><td style="text-align: center;">759</td><td style="text-align: center;">+ 259</td></tr> </table>	789	789	259	Number of girls	Number of children in the school		Number of boys			?	759	759	+ 259
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?																					
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With jottings... or in your head	Add and subtract numbers mentally, including: a 3 digit number and ones; a 3 digit number and tens; a 3 digit number and hundreds.		With jottings... or in your head																		
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. $330 + 670 = 1000$.																		
Checking strategies	Estimate the answer to a calculation and use inverse operations to check answers. Check answers by repeating addition in a different order. REINFORCE Adding zero leaves a number unchanged/adding ten to a number keeps unit digit constant.		Estimate and use inverse operations to check answers to a calculation. Approximate using the most significant digit, rounding skills. REINFORCE Refer to the carried digit as a ten or a hundred.																		
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																	

Addition KS2

Year	5	6	
<p>Layers of vocabulary</p>  <p>Appendix 1a Beck's Tiers of Vocabulary Appendix 1b: Vocabulary book</p>	<p>Basic to subject specific (Beck's Tiers): add, addition, more, plus, increase sum, total, altogether score double, near double how many more to make...?</p> <p>Instructional vocabulary: put, place arrange, rearrange change, change over split, separate</p>	<p>Basic to subject specific (Beck's Tiers): add, addition, more, plus, increase sum, total, altogether score double, near double how many more to make...?</p> <p>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</p>	
NC 2014	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.	Solve problems involving addition, subtraction, multiplication and division.	
Developing Conceptual/ Procedural Understanding	<p>Columnar addition Include calculations involving more than 2 numbers and carrying figures >1.</p> $\begin{array}{r} 25567 \\ 16397 \\ +15984 \\ \hline 57948 \\ \small{1\ 1\ 2\ 1} \end{array}$ <p>Include calculations with 'empty columns'. 124.9 + 7.25</p> $\begin{array}{r} 124.90 \\ + 7.25 \\ \hline 132.25 \\ \small{1\ 1} \end{array}$	<p>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?</p> <p>The three Fletcher children need to cool down and they all choose a drink at the shop. Karen's is the cheapest, only half the price of John's. Matthew's is the most expensive at £1.60. John chooses the one that costs 20p less than his brother's. What is the total cost of the drinks?</p> 	<p>Columnar addition Include calculations with up to 3 'empty columns'. 128.7 + 3.014</p> $\begin{array}{r} 128.700 \\ +3.014 \\ \hline 131.714 \\ \small{1} \end{array}$ <p>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?</p>
With jottings... or in your head	Add and subtract numbers mentally with increasingly large numbers.	Undertake mental calculations with increasingly large numbers and more complex calculations.	
Known facts	Derive and use addition and subtraction facts to 10 and 1, e.g. 3.3+ 6.7	All the KS2 required facts	

Addition KS2

	=10 and so $0.33 + 0.67 = 1$.			
Checking strategy	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. Promote decision making so that pupils choose an appropriate method/strategy. REINFORCE Decimals, fill 'empty columns' with zeros as place holders.		Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	
Essential knowledge	Fluency of 2 digit + 2 digit including with decimals	Add multiples of 10, 100, 1000 and tenths	Fluency of 2 digit + 2 digit including with decimals	Add multiples of 10, 100, 1000, tenths and hundredths
	Partition second number to add	Use number facts, bridging and place value	Partition second number to add	Use number facts, bridging and place value
	Adjust numbers to add	Partition and recombine	Adjust numbers to add	Partition and recombine