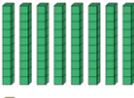
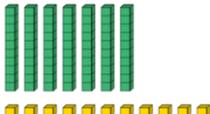
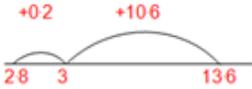


**John Randall Primary School and Nursery**  
**Subtraction Key Stage 2 Calculation Policy**



<p><b>KS1</b></p> <p><b>Appendix 2:</b> Pupil target grids</p>	<p><b>KS1</b></p> <p>Pupils should practise subtraction to 20 and within to become increasingly fluent. They should use the facts they know to derive others, e.g. using <math>10 - 7 = 3</math> and <math>7 = 10 - 3</math> to calculate <math>100 - 70 = 30</math> and <math>70 = 100 - 30</math>.</p> <p>Know the effect of zero.</p> <p>As well as number lines, 100 squares could be used to model calculations such as <math>74 - 11</math>, <math>77 - 9</math> or <math>36 - 14</math>, where partitioning or adjusting are used. Pupils should learn to check their calculations, including by adding to check. They should continue to see subtraction as both take away and finding the difference and should find a small difference by counting up. They should use Dienes to model partitioning into tens and ones and learn to partition numbers in different ways e.g. <math>23 = 20 + 3 = 10 + 13</math>.</p>	
<p>Year</p>	<p>3</p>	<p>4</p>
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary</p> <p><b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b> subtract, subtraction, take (away), minus, leave, one less, two less... ten less... one hundred less...difference between, half, halve = equals, sign, is the same as tens boundary, hundreds boundary, exchange, carried digits, <b>How many are left/left over? How many fewer is...than...? How much less is...?</b></p> <p><b>Instructional vocabulary:</b> explain your method, explain how you got your answer, give an example of...show how you...show your working</p> <p><b>Language of tests and questions</b> estimate, write....in order, complete, circle, estimate, tick, draw, draw two, draw the arrow, show your working, use the, complete, shade, write in, true or false, tick two, circle all, , use a ruler, write a possible, <b>What is...? What is next? How many...? What number...? Which of these? What numbers could be...? How many are left?</b></p>	<p><b>Basic to subject specific (Beck's Tiers):</b> subtract, subtraction, take (away), minus, decrease, leave, difference between, half, halve, equals, sign, is the same as tens boundary, hundreds boundary, inverse, exchange, carried digits, <b>How many are left/left over? How many more/fewer is...than...? How much more/less is...?</b></p> <p><b>Instructional vocabulary:</b> calculate, work out, solve, investigate, question, answer check</p> <p><b>Language of tests and questions</b> write, order, complete, draw three, write....in the boxes, show your working, use the method, write the missing, shade, write in order, tick, write your answer as..., write the letter (can be used more than once), describe, write one word, write your answer in, match, to make...you need, draw four, on which, calculate, write these numbers, use the coordinates to draw, estimate, in each box, write these values, circle the best, complete the table, round each number, draw one line, circle all, tick three, plot, check, <b>How many...? What is...? How much? What number...? Who takes...?</b></p>

NC 2014	Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction. Least significant digit is always dealt with first to establish if the exchange is needed.		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>Developing Conceptual/ Procedural Understanding</p> <p>Appendix 1: Place value models</p> <p>Columns to be headed HTU</p>	<p><b>Subtract mentally pairs of multiples of 100 using known facts</b>  <math>600 - 200 = 400</math> because <math>6 - 2 = 4</math></p> <p><b>Remodelling strategy (keeping the difference the same)</b>  <math>502 - 198</math>  <math>504 - 200 = 304</math></p> <p><b>Re-arranging</b>          Use of apparatus to understand rearrangements, e.g. 55 as 40 and 15(not as part of calculations).</p> <p><b>Place value materials to represent calculations</b>          Diennes and then place value counters.</p>	<p><b>Start with least significant digit - decomposition</b></p> $\begin{array}{r} 81 = 80 \quad 1 \\ - 57 \quad 50 \quad 7 \\ \hline \end{array}$ $\begin{array}{r} 81 = 70 \quad 11 \\ - 57 \quad 50 \quad 7 \\ \hline 24 \quad 20 \quad 4 \end{array}$ <p>“1 subtract 7 is tricky so I will rearrange 81 into 70 and 11. 11 subtract 7 equals 4 and 70 subtract 50 equals 20. 20 and 4 make 24.”</p> <p>81 – 57 =</p>  <p>81 becomes 70 and 11</p>  $\begin{array}{r} 754 \quad 700 \quad 50 \quad 4 \\ - 86 \quad \quad \quad 80 \quad 6 \\ \hline \end{array}$ $\begin{array}{r} 754 \quad 600 \quad 140 \quad 14 \\ - 86 \quad \quad \quad 80 \quad 6 \\ \hline 668 \quad 600 \quad 60 \quad 8 \end{array}$ <p>“It’s tricky to take 6 from 4 and 80 from 50. I need to rearrange the number. I will exchange one ten from 50 which leaves 40 and makes 14 in the units.</p>	<p>40 to subtract 80 is tricky. I will exchange one hundred from 700 and make 140. 14 subtract 6 equals 8. 140 subtract 80 equals 60 and 600 subtract 0 equals 600.”</p> <p><b>Columnar subtraction</b></p> $\begin{array}{r} 6 \quad 14 \quad 1 \\ 784 \\ - 286 \\ \hline 498 \end{array}$ <p><b>Emphasis on language of place value, i.e. 14 units subtract 6 units, 14 tens subtract 8 tens, and 6 hundreds subtract 2 hundreds.</b></p> <p><b>Representing problems</b>          There are 386 pupils at Oak Primary. If 79 pupils have sandwiches, how many have dinners?</p> <table border="1" data-bbox="827 959 1014 1003"> <tr><td>386</td></tr> <tr><td>?      79</td></tr> </table>	386	?      79	<p><b>Subtract mentally pairs of multiples of 1000 using known facts</b>  <math>6000 - 2000 = 4000</math> because <math>6 - 2 = 4</math></p> <p><b>Remodelling strategy (keeping the difference the same)</b>  <math>3548 - 1998</math>  <math>3550 - 2000 = 1550</math></p> <p><b>Find the difference strategy</b>  <math>13.6 - 2.8 =</math></p>  <p><math>13.6 - 2.8 = 10.8</math></p> <p><b>Place value materials to represent calculations</b>          Appendix 1.</p>	<p><b>Columnar subtraction</b>  <math>2344 - 187</math></p> $\begin{array}{r} 2 \quad 3 \quad 4 \\ 2344 \\ - 187 \\ \hline 2157 \end{array}$ $6467 - 2684$ $\begin{array}{r} 5 \quad 13 \quad 1 \\ 6467 \\ - 2684 \\ \hline 3783 \end{array}$ <p><b>Columnar subtraction (decimals) in contexts such as money and measurement</b></p> $32.34 - 14.18$ $\begin{array}{r} 2 \quad 1 \quad 2 \quad 1 \\ 32.34 \\ - 14.18 \\ \hline 18.16 \end{array}$	<p><b>Representing problems</b>          Check the answer to the following calculations using the inverse. Show all your working.</p> <p><math>2456 - 734 = 1822</math></p> <table border="1" data-bbox="1627 505 1906 597"> <tr><td>2456</td></tr> <tr><td>1822      734</td></tr> </table>	2456	1822      734
386										
?      79										
2456										
1822      734										
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	Subtract single digit bridging through boundaries	Subtract multiples of 10,100	Fluency of 2 digit - 2 digit	Subtract multiples of 10, 100 and 1000						
	Partition second number to	Pairs of 100 (complements of	Partition second number to subtract	Decimal subtraction from 10 or 1						



	$\begin{array}{r} 1181 \\ 324.90 \\ - 7.25 \\ \hline 317.65 \end{array}$		$\begin{array}{r} 122456 - 11999 \\ +1 \text{ to each side of the equation} \\ \hline 122457 - 12000 \end{array}$	
Known facts	Derive and use addition and subtraction facts to 10 and 1, e.g. $3.3 + 6.7 = 10$ leads to $10 - 3.3 = 6.7$ and $0.33 + 0.67 = 1$ so $1 - 0.67 = 0.33$ . BIDMAS.		All the KS2 required facts. BIDMAS.	
Essential knowledge	Fluency of 2 digit - 2 digit including with decimals	Subtract multiples of 10, 100, 1000 and tenths	Fluency of 2 digit - 2 digit including with decimals	Subtract multiples of 10, 100, 1000, tenths and hundredths
	Partition second number to subtract	Use number facts, bridging and place value	Partition second number to subtract	Use number facts, bridging and place value
	Adjust numbers to subtract	Difference between	Adjust numbers to subtract	Difference between
	Negative numbers, counting forwards and backwards through zero		Negative numbers, calculate intervals across zero	