

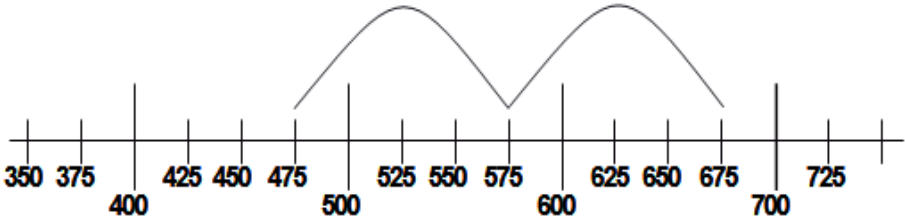
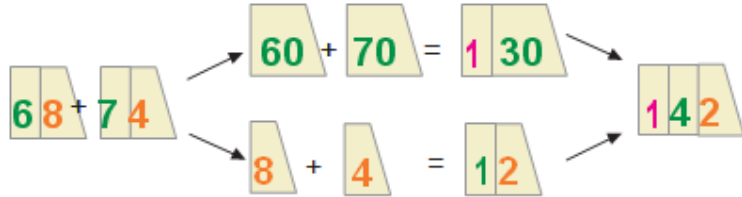
LOWER KEY STAGE 2

In Lower Key Stage 2, children build on the concrete and conceptual understandings they have gained in Key Stage 1 to develop a real mathematical understanding of the four operations, in particular developing arithmetical competence in relation to larger numbers.

Addition and subtraction: Children are taught to use place value and number facts to add and subtract numbers mentally and they will develop a range of strategies to enable them to discard the ‘counting in 1s’ or fingers-based methods of Key Stage 1. In particular, children will learn to add and subtract multiples and near multiples of 10, 100 and 1000, and will become fluent in complementary addition as an accurate means of achieving fast and accurate answers to 3-digit subtractions. Standard written methods for adding larger numbers are taught, learned and consolidated, and written column subtraction is also introduced.

Multiplication and division: This key stage is also the period during which all the multiplication and division facts are thoroughly memorised, including all facts up to 12×12 . Efficient written methods for multiplying or dividing a 2-digit or 3-digit number by a 1-digit number are taught, as are mental strategies for multiplication or division with large but ‘friendly’ numbers, e.g. when dividing by 5 or multiplying by 20.

Fractions and decimals: Children will develop their understanding of fractions, learning to reduce a fraction to its simplest form, as well as finding non-unit fractions of amounts and quantities. The concept of a decimal number is introduced and children consolidate a firm understanding of 1-place decimals, multiplying and dividing whole numbers by 10 and 100.

	Year 3 Mental Methods	Year 3 Written Methods
Addition	<p>Using place value Count in 100s e.g. Know $475 + 200$ as 475, 575, 675</p>  <p>Add multiples of 10, 100 and £1 e.g. $746 + 200$ e.g. $746 + 40$ e.g. $£6.34 + £5$ as $£6 + £5$ and 34p</p> <p>Partitioning e.g. $£8.50 + £3.70$ as $£8 + £3$ and $50p + 70p$ and combine the totals: $£11 + £1.20$ e.g. $347 + 36$ as $300 + 40 + 30$ and $7 + 6$ and combine the totals: $370 + 13 = 383$ e.g. $68 + 74$ as $60 + 70$ and $8 + 4$ and combine the totals: $130 + 12 = 142$</p> 	<p>Build on partitioning to develop expanded column addition with two 3-digit numbers e.g. $466 + 358$</p> $\begin{array}{r} 400 & 60 & 6 \\ + & 300 & 50 & 8 \\ \hline 700 & 110 & 14 & = 824 \end{array}$ <p>Use expanded column addition where digits in a column add to more than the column value e.g. $466 + 358$</p> $\begin{array}{r} 400 & 60 & 6 \\ + & 300 & 50 & 8 \\ + & 100 & 10 & \\ \hline 800 & 20 & 4 & \end{array}$ <p>Compact column addition with two or more 3-digit numbers or towers of 2-digit numbers e.g. $347 + 286 + 495$</p> $\begin{array}{r} 347 \\ + 286 \\ + 495 \\ \hline 1128 \end{array}$ <p>Compact column addition with 3- and 4-digit numbers Recognise like fractions that add to 1 e.g. $\frac{1}{4} + \frac{3}{4}$ e.g. $\frac{3}{5} + \frac{2}{5}$</p>

	Year 3 Mental Methods	Year 3 Written Methods
Addition	<p>Counting on</p> <p>Add two 2-digit numbers by adding the multiple of 10, then the 1s e.g. $67 + 55$ as $67 + 50 (117) + 5 = 122$</p> <p>Add near multiples of 10 and 100 e.g. $67 + 39$ e.g. $364 + 199$</p> <p>Add pairs of 'friendly' 3-digit numbers e.g. $548 + 120$</p> <p>Count on from 3-digit numbers e.g. $247 + 34$ as $247 + 30 (277) + 4 = 281$</p> <p>Using number facts</p> <p>Know pairs which total each number to 20 e.g. $7 + 8 = 15$ e.g. $12 + 6 = 18$</p> <p>Number bonds to 100 e.g. $35 + 65$ e.g. $46 + 54$ e.g. $73 + 27$</p> <hr style="border: 1px dashed #ccc;"/> <p>Add to the next 10 and the next 100 e.g. $176 + 4 = 180$ e.g. $435 + 65 = 500$</p>	

Year 3 Mental Methods

Taking away

Use place value to subtract

e.g. $348 - 300$

e.g. $348 - 40$

e.g. $348 - 8$



Take away multiples of 10, 100 and £1

e.g. $476 - 40 = 436$

e.g. $476 - 300 = 176$

e.g. $£4.76 - £2 = £2.76$

Partitioning

e.g. $68 - 42$ as $60 - 40$ and $8 - 2$

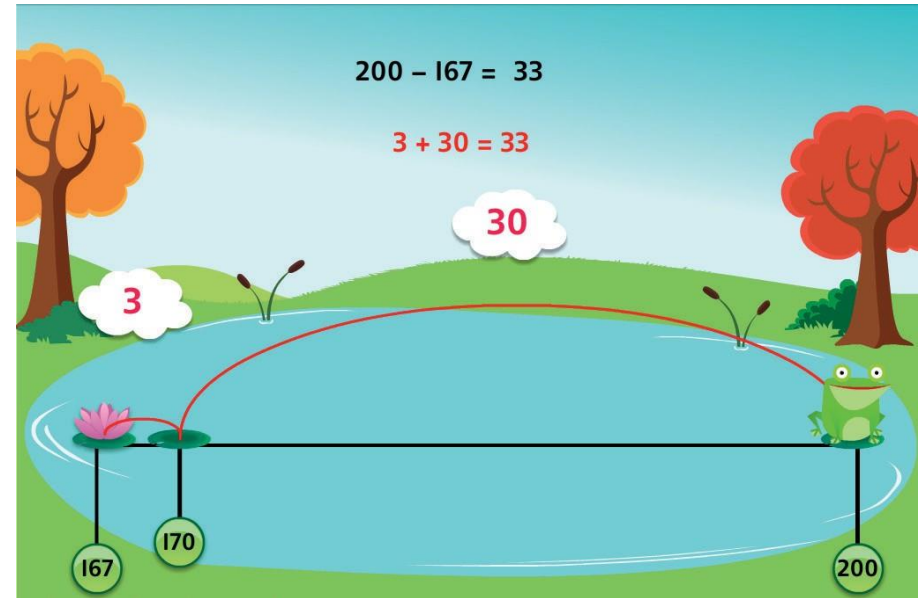
e.g. $£6.84 - £2.40$ as $£6 - £2$ and $80p - 40p$



Year 3 Written Methods

Develop counting up subtraction

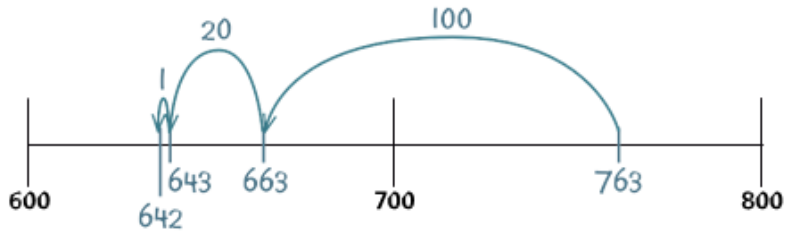
e.g. $200 - 167$



Year 3 Mental Methods

Count back in 100s, 10s then 1s

e.g. $763 - 121$ as $763 - 100$ (663) $- 20$ (643) $- 1 = 642$



Subtract near multiples of 10 and 100

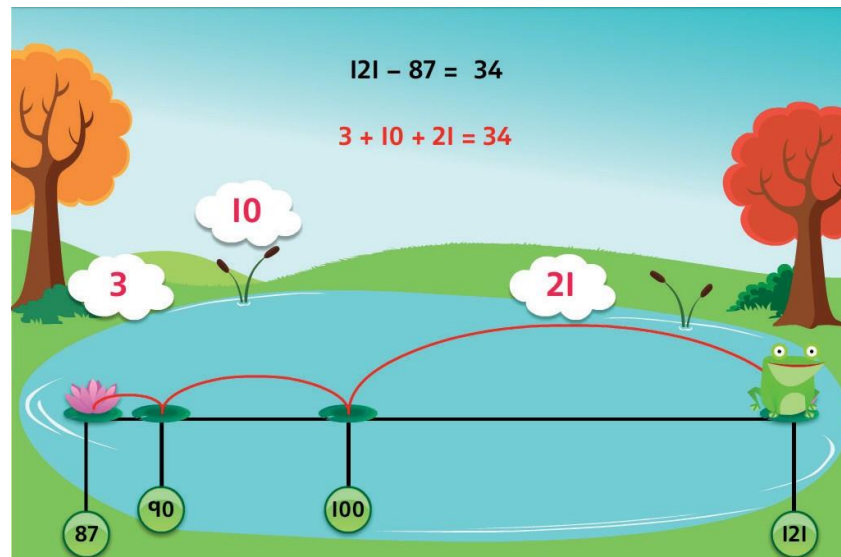
e.g. $648 - 199$

e.g. $86 - 39$

Counting up

Find a difference between two numbers by counting up from the smaller to the larger

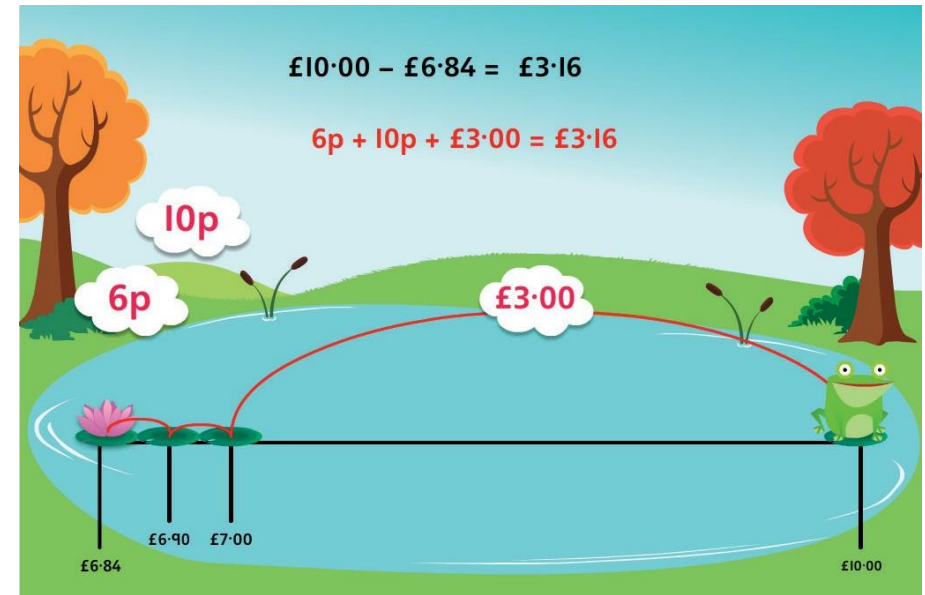
e.g. $121 - 87$



Year 3 Written Methods

Use counting up subtraction to find change from £1, £5 and £10


e.g. $£10.00 - £6.84$

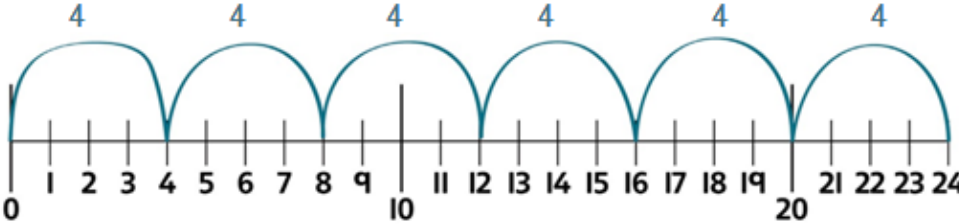


Recognise complements of any fraction to 1

e.g. $1 - \frac{1}{4} = \frac{3}{4}$

e.g. $1 - \frac{3}{5} = \frac{2}{5}$

Subtraction	Year 3 Mental Methods	Year 3 Written Methods
	<p>Using number facts Know pairs which total each number to 20 e.g. $20 - 14 = 6$ Number bonds to 100 e.g. $100 - 48 = 52$ e.g. $100 - 35 = 65$</p>  <p>Subtract using number facts to bridge back through a 10 e.g. $42 - 5 = 42 - 2 (40) - 3 = 37$</p>	

		Year 3 Mental Methods	Year 3 Written Methods																																																																																																											
Multiplication	Year 3 Mental Methods	<p>Counting in steps ('clever' counting) Count in 2s, 3s, 4s, 5s, 8s and 10s</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr> <tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr> <tr><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td></tr> <tr><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td></tr> <tr><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td></tr> </table> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	<p>Build on partitioning to develop grid multiplication e.g. 23×4</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">×</td> <td style="padding: 5px; color: green;">20</td> <td style="padding: 5px; color: orange;">3</td> <td rowspan="2" style="padding: 5px;">= 92</td> </tr> <tr> <td style="padding: 5px;">4</td> <td style="padding: 5px;">80</td> <td style="padding: 5px;">12</td> </tr> </table>	×	20	3	= 92	4	80	12
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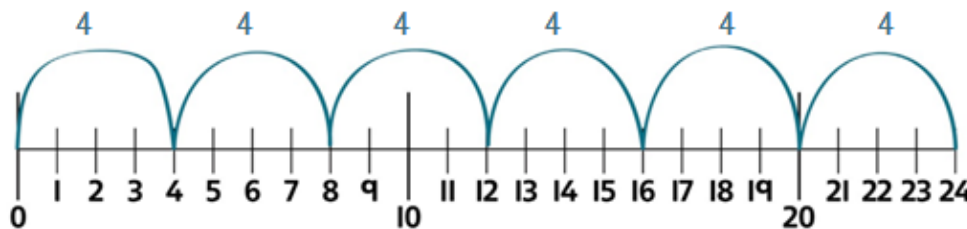
	Year 3 Mental Methods	Year 3 Written Methods
Multiplication	<p>Doubling and halving</p> <p>Find doubles of numbers to 50 using partitioning e.g. <i>double 48</i></p> <div style="text-align: center;"> </div>	
	<p>Use doubling as a strategy in multiplying by 2 e.g. <i>18 x 2 is double 18 = 36</i></p> <p>Grouping</p> <p>Recognise that multiplication is commutative e.g. $4 \times 8 = 8 \times 4$</p> <p>Multiply multiples of 10 by 1-digit numbers e.g. $30 \times 8 = 240$</p> <p>Multiply 'friendly' 2-digit numbers by 1-digit numbers e.g. 13×4</p> <p>Using number facts</p> <p>Know doubles to double 20 e.g. <i>double 15 is 30</i></p> <p>Know doubles of multiples of 5 to 100 e.g. <i>double 85 is 170</i></p> <p>Know x2, x3, x4, x5, x8, x10 tables facts</p>	

Year 3 Mental Methods

Counting in steps ('clever' counting)

Count in 2s, 3s, 4s, 5s, 8s and 10s

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Year 3 Written Methods

Using number facts

Know half of even numbers to 40
Know half of multiples of 10 to 200

e.g. *half of 170 is 85*
Know $\times 2$, $\times 3$, $\times 4$, $\times 5$, $\times 8$, $\times 10$ division facts

Perform divisions just above the 10th multiple using written jottings, understanding how to give a remainder as a whole number

Use division facts to find unit and simple non-unit fractions of amounts within the times-tables

e.g. $\frac{3}{4}$ of 48 is $3 \times (48 \div 4) = 36$

		Year 3 Mental Methods	Year 3 Written Methods
Division	Year 3 Mental Methods	<p>Doubling and halving</p> <p>Find half of even numbers to 100 using partitioning e.g. <i>find half of 48</i></p> <div style="text-align: center;"> </div> <p>Use halving as a strategy in dividing by 2 e.g. $36 \div 2$ is <i>half of 36</i> = 18</p> <p>Find half of odd numbers</p>	
	Year 3 Written Methods		

Year 3 Mental Methods

Year 3 Written Methods

Grouping

Recognise that division is not commutative

e.g. $16 \div 8$ does not equal $8 \div 16$

Relate division to multiplications 'with holes in'

e.g. $_ \times 5 = 30$ is the same calculation as $30 \div 5 = _$ thus we can count in 5s to find the answer



Divide multiples of 10 by 1-digit numbers

e.g. $240 \div 8 = 30$

Begin to use subtraction of multiples of 10 of the divisor to divide numbers above the 10th multiple

e.g. $52 \div 4$ is 10×4 (40) and 3×4 (12) = 13