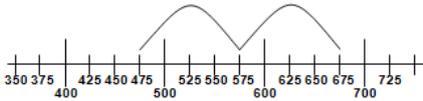
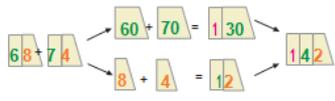
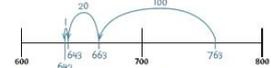
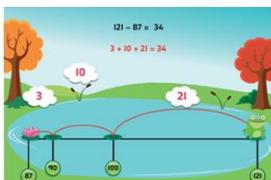
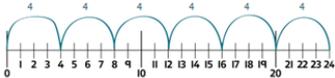


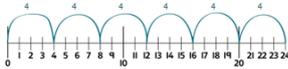
Year Three: Mental Methods

+	<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 $300 + 30$ and $40 + 30$ 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>Counting on Add two 2-digit numbers by adding the multiple of 10, then the 1s e.g. $67 + 55$ as $67 + 50 (117) + 5 = 122$ Add near multiples of 10 and 100 e.g. $67 + 39$ e.g. $364 + 199$ Add pairs of 'friendly' 3-digit numbers e.g. $548 + 120$ Count on from 3-digit numbers e.g. $247 + 34$ as $247 + 30 (277) + 4 = 281$</p> <p>Using number facts Know pairs which total each number to 20 e.g. $7 + 8 = 15$ e.g. $12 + 6 = 18$ Number bonds to 100 e.g. $35 + 65$ e.g. $46 + 54$ e.g. $73 + 27$</p> <hr style="border: 1px dotted black;"/> <p>Add to the next 10 and the next 100 e.g. $176 + 4 = 180$ e.g. $435 + 65 = 500$</p>	<ul style="list-style-type: none"> • Know pairs with each total to 20 e.g. $2 + 6 = 8, 12 + 6 = 18, 7 + 8 = 15$ • Know pairs of multiples of 10 with a total of 100 • Add any two 2-digit numbers by counting on in 10s and 1s or by using partitioning • Add multiples and near multiples of 10 and 100 • Perform place-value additions without a struggle e.g. $300 + 8 + 50 = 358$ • Use place value and number facts to add a 1-digit or 2-digit number to a 3-digit number e.g. $104 + 56$ is 160 since $104 + 50 = 154$ and $6 + 4 = 10$ $676 + 8$ is 684 since $8 = 4 + 4$ and $76 + 4 + 4 = 84$ • Add pairs of 'friendly' 3-digit numbers e.g. $320 + 450$ Begin to add amounts of money using partitioning 																																																																																																			
-	<p>Count back in 100s, 10s then 1s e.g. $763 - 121$ as $763 - 100 (663) - 20 (643) - 1 = 642$</p>  <p>Subtract near multiples of 10 and 100 e.g. $649 - 199$ e.g. $88 - 39$</p> <p>Counting up Find a difference between two numbers by counting up from the smaller to the larger e.g. $121 - 87$</p>  <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>	<p>Taking away Use place value to subtract e.g. $348 - 300$</p>  <p>e.g. $348 - 40$ e.g. $348 - 8$</p> <p>Take away multiples of 10, 100 and £1 e.g. $476 - 40 = 436$ e.g. $476 - 300 = 176$ e.g. $£4.76 - £2 = £2.76$</p> <p>Partitioning e.g. $68 - 42$ as $60 - 40$ and $8 - 2$ e.g. $£6.84 - £2.40$ as $£6 - £2$ and $80p - 40p$</p> 	<ul style="list-style-type: none"> • Know pairs with each total to 20 e.g. $8 - 2 = 6$ e.g. $18 - 6 = 12$ e.g. $15 - 8 = 7$ • Subtract any two 2-digit numbers • Perform place-value subtractions without a struggle e.g. $536 - 30 = 506$ • Subtract 2-digit numbers from numbers > 100 by counting up e.g. $143 - 76$ is done by starting at 76. Then add 4 (80), then add 20 (100), then add 43, making the difference a total of 67 • Subtract multiples and near multiples of 10 and 100 • Subtract, when appropriate, by counting back or taking away, using place value and number facts • Find change from £1, £5 and £10 																																																																																																			
X	<p>Counting in steps ('clever' counting) Count in 2s, 3s, 4s, 5s, 8s and 10s</p> <table border="1" style="width: 100%; text-align: center; 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>  <p>Doubling and halving Find doubles of numbers to 50 using partitioning e.g. double 48</p>  <p>Use doubling as a strategy in multiplying by 2 e.g. 18×2 is double $18 = 36$</p> <p>Grouping Recognise that multiplication is commutative e.g. $4 \times 8 = 8 \times 4$ Multiply multiples of 10 by 1-digit numbers e.g. $30 \times 3 = 240$ Multiply 'friendly' 2-digit numbers by 1-digit numbers e.g. 13×4</p> <p>Using number facts Know doubles to double 20 e.g. double 15 is 30 Know doubles of multiples of 5 to 100 e.g. double 55 is 110 Know $\times 2, \times 3, \times 4, \times 5, \times 8, \times 10$ tables facts</p>	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	<ul style="list-style-type: none"> • Know by heart all the multiplication facts in the $\times 2, \times 3, \times 4, \times 5, \times 8$ and $\times 10$ tables • Multiply whole numbers by 10 and 100 • Recognise that multiplication is commutative • Use place value and number facts in mental multiplication e.g. 30×5 is 15×10 • Partition teen numbers to multiply by a 1-digit number e.g. 3×14 as 3×10 and 3×4 • Double numbers up to 50
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																																																																																													

Counting in steps ('clever' counting)

Count in 2s, 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



Doubling and halving

Find half of even numbers to 100 using partitioning
e.g. find half of 48



Use halving as a strategy in dividing by 2
e.g. $36 \div 2$ is half of $36 = 18$
Find half of odd numbers

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

- Know by heart all the division facts derived from the $\times 2$, $\times 3$, $\times 4$, $\times 5$, $\times 8$ and $\times 10$ tables
- Divide whole numbers by 10 or 100 to give whole number answers
- Recognise that division is not commutative
- Use place value and number facts in mental division
e.g. $84 \div 4$ is half of 42
- Divide larger numbers mentally by subtracting the 10th multiple as appropriate, including those with remainders
e.g. $57 \div 3$ is $10 + 9$ as $10 \times 3 = 30$ and $9 \times 3 = 27$
- Halve even numbers to 100, halve odd numbers to 20