

**Churchfields Infants' School,
Nursery Unit
& Language Facility**

**Mathematics Calculation
Policy**

Mathematics Calculation Policy

This policy concentrates on the introduction of standard symbols, the use of the empty number line to aid mental calculation and on the introduction of other pencil and paper procedures. The long-term aim is for children to be able to select an efficient method of their choice (whether this be mental or written) that is appropriate for a given task.

Aims

Children are introduced to the processes of calculation through practical, oral and mental activities. As children begin to understand the underlying ideas, they develop ways of:-

- Recording to support their thinking and calculation methods
- Using particular methods that apply to 'certain tasks and challenges'
- Interpreting and using the signs and symbols involved

As children's methods are strengthened and refined, so too are their informal written methods. These methods become more efficient and lead to efficient written methods that can be used more generally.

Early practical, oral and mental work *must lay the foundations* by providing children with a good understanding of:-

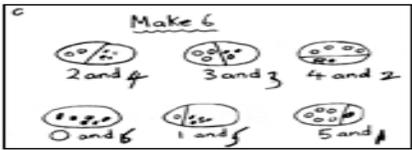
- How the four operations build on efficient counting strategies
- Place value
- Number facts

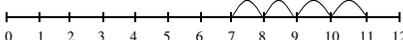
Mental calculation is not at the exclusion of written recording and should be seen as complementary to and not as separate from it. In every written method there is an element of mental processing. Sharing written methods with the teacher encourages children to think about the mental strategies that underpin them and to develop new ideas. Therefore written recording helps children to clarify their thinking and also supports and extends the development of more fluent and sophisticated mental strategies. Children should be encouraged to see mathematics as both a written and spoken language.

Early Years Foundation Stage

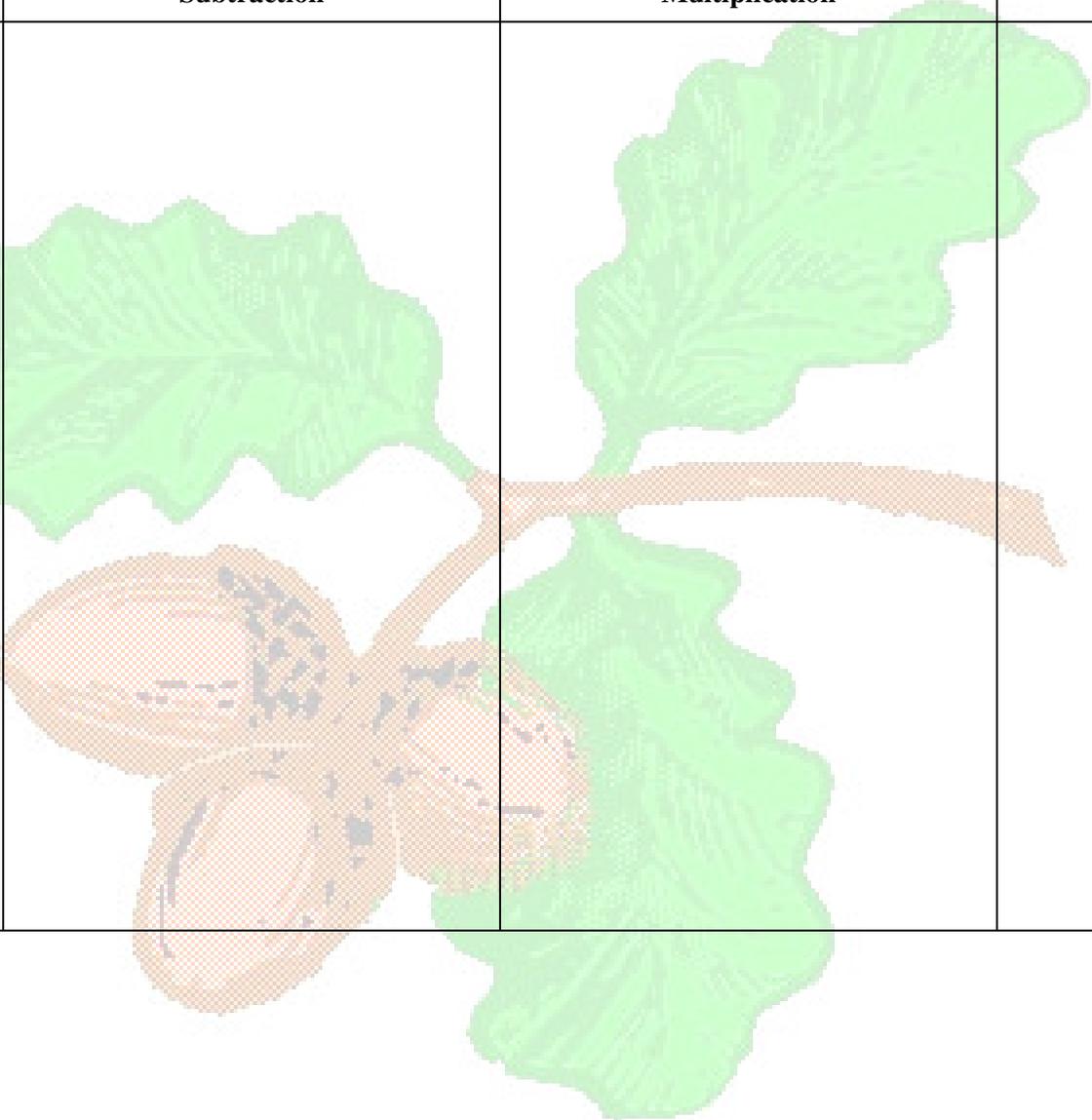
Previous Learning: Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They must be able to use number names and number language spontaneously. They should be able to count, not only objects, accurately and to understand that numbers identify how many are in a set.

Addition	Subtraction	Multiplication	Division
<p>When counting the children will understand that a group of objects changes it's quantity when something is added They will move on to finding the total of objects in two sets by counting all of them</p> <p>The children use one-digit numbers to add together (moving towards two-digit and ones as they progress)</p> <p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>In practical activities and discussion the children should begin to use the vocabulary involved in addition</p> <p><u>Number songs and rhymes</u> Children have access to a range of number songs which introduce simple calculations. They are encouraged to join in and show amounts using their fingers.</p>	<p>When counting the children will understand that a group of objects changes it's quantity when something is taken away</p> <p>Children subtract 2 single digit numbers and work towards counting back to find the answer</p> <p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>In practical activities and discussion the children should begin to use the vocabulary involved in subtraction</p> <p><u>Number songs and rhymes</u> Children have access to a range of number songs which introduce simple subtraction. They are encouraged to join in and show amounts using their fingers.</p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>Children should be made aware of the different vocabulary related to multiplication, and to use and understand a variety of different words</p> <p><u>Pictures / marks</u> How many wheels do we need to make three lego cars?</p>  <p>Grouping: How many pairs of socks are there in the 'laundrette'?</p>  <p>They will count in 2s and 5s and 10s.</p> <p>They will work on practical problem solving activities involving equal sets or groups.</p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>Children should be made aware of the different vocabulary related to division, and to use and understand a variety of different words</p> <p><u>Pictures / marks</u> Children will understand equal groups and share items out in play and problem solving.</p>  <p><u>Halving</u> Share a group of objects into 2 equal sets</p> <p><u>Problem solving</u> Children begin to identify problems based on their own interests and "fascinations"</p>

Addition	Subtraction	Multiplication	Division
<p><u>Number stories</u> Children engage with a variety of number stories that help to develop understanding both in focus activities and at child initiated times.</p> <p><u>Pictures / marks</u> Children begin by completing practical activities and practicing their understanding. After exploring with using their fingers, and making marks on paper, the children will need to develop ways of recording calculations using pictures, etc.</p> <p>How many will there be if I put one more?</p> <p>There are 3 cars in the garage. 2 more arrive. How many are there altogether?</p>  	<p><u>Number stories</u> Children engage with a variety of number stories that help to develop understanding both in focus activities and at child initiated times.</p> <p><u>Pictures / marks</u> Children begin by completing practical activities and practicing their understanding of subtraction e.g. how many will there be if there is one less?</p> <p>We made 6 cakes and ate 2. How many are left?</p>  <p>They use practical resources to support calculation.</p> <p><u>Number lines</u> <i>(Prepared number lines used)</i> Introduce counting back on a number track $7 - 4 = 3$</p> <p>Teachers <i>demonstrate</i> the use of the number line.</p>	<p><u>Number lines</u> Children can move along a number line. E.g. Jumping forward along a number track in ones and twos and fives and tens.</p> <p>They will work on practical problem solving activities involving equal sets or groups.</p> <p><u>Informal jottings</u> Draw groups of objects in sets:</p>  <p><u>Doubling</u> Make 2 sets of objects, each with the same number in</p> <p><u>Problem solving</u> Children begin to identify problems based on their own interests and “fascinations”</p>	<p><u>Practical Examples</u></p> <ul style="list-style-type: none"> • In the role play area share the place settings between 2 children • Group bags of sweets for the teddies • Follow a recipe:- each child will need 5 cherries • Halving a piece of bread • Sharing fruit at snack time • Education City programmes

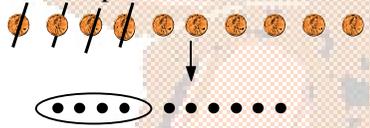
Addition	Subtraction	Multiplication	Division
<p>“Count all” They use practical resources to support calculation and teachers <i>demonstrate</i> the use of the number line. When confident in their understanding, children will then begin to record their calculations using the standard method e.g. $3+2=5$</p> <p>Number lines <i>(Prepared number lines used)</i></p> <p>Introduce counting on a number $7 + 4 = 11$</p>  <p>Informal jottings Drawing adding pictures e.g. Can the children make 5 in a variety of ways?</p> <p>Problem solving Children begin to identify problems based on their own interests and “fascinations”. Children complete problem solving activities across the year, to assess their understanding of simple calculation.</p>	<p>Problem solving Children begin to identify problems based on their own interests and “fascinations”</p> <p>Practical Examples</p> <ul style="list-style-type: none"> • Finding one less than • Pictures of calculations • Pose problems and questions related to everyday routines • Counting crocodile • Education City programmes 	<p>Practical Examples</p> <ul style="list-style-type: none"> • Pairs of socks in 2s on a washing line • Counting in 2s and 10s • Count repeated groups of the same size • Sort real objects and pictures into sets of equal number, whilst counting aloud • Show photos of hands on IWB. How can we arrange them to make counting the fingers easier? • Role play opportunities... ‘We’ll need enough for 6 of us’ • Ladybird doubling • Dominoes • Education City programmes 	

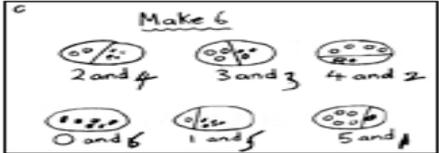
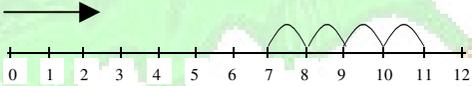
Addition	Subtraction	Multiplication	Division
<p>Practical examples</p> <ul style="list-style-type: none"> Counting real objects – In construction and small world play, provide plans for models showing numbers e.g. 10 pieces of lego Begin to use number lines and count on. Use of practical materials for counting e.g. encouraging children to provide correct number of pennies for a ticket costing 5p Bury numbers in the sand. Children have to find a number which is one more than target number. Combining two groups of objects e.g. counting groups of skittles Children have to find a number which is one more than target number. Education City programmes 			

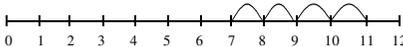
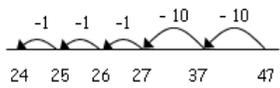


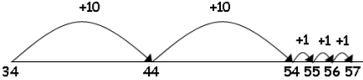
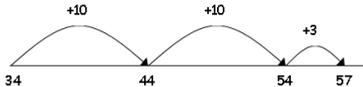
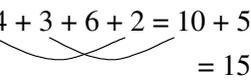
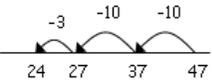
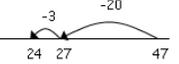
Year 1

Previous Learning: Most children will have learnt to count forwards and backwards from any given number, recognise and write numerals and interpret mathematical signs. They may be able to recall some number facts to 10 with increasing confidence and speed

Addition	Subtraction	Multiplication	Division
<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom Children should be made aware of the different vocabulary related to addition, and to use and understand a variety of different words</p> <p><u>Ask and answer questions</u> Opportunities should be given for the children to be able to ask and answer questions about their learning</p> <p><u>Pictures / marks</u> Lisa has 5 lollies and Tim has 4 lollies. How many lollies do they have altogether? “Count all”</p> <p style="text-align: center;"></p> <p>Using apparatus/materials to add up.</p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom Children should be made aware of the different vocabulary related to subtraction, and to use and understand a variety of different words</p> <p><u>Ask and answer questions</u> Opportunities should be given for the children to be able to ask and answer questions about their learning</p> <p><u>Pictures / marks</u> Sam spent 4p. What was his change from 10p?</p> <p style="text-align: center;"></p> <p><u>Signs and symbols</u></p> <p style="text-align: center;"> $5 - 2 = \square$ $\square = 5 - 2$ $5 - \square = 3$ $3 = \square - 2$ $\square - 2 = 3$ $3 = 5 - \square$ </p> <p>Children understand that the order of numbers in a subtraction calculation</p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom Children should be made aware of the different vocabulary related to multiplication, and to use and understand a variety of different words</p> <p><u>Ask and answer questions</u> Opportunities should be given for the children to be able to ask and answer questions about their learning</p> <p><u>Pictures / marks</u> There are 2 sweets in one bag. How many sweets are there in 5 bags?</p> <p><u>Number lines</u> <i>(Recording on a number line modelled by the teacher when solving problems)</i> Link counting in twos, fives and tens to jumping along a number line.</p> <p><u>100 square</u> Colouring patterns of 2, 5 and 10</p> <p><u>Informal jottings</u> Identify missing numbers in number sentences, linked to counting in steps of</p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom Children should be made aware of the different vocabulary related to division, and to use and understand a variety of different words</p> <p><u>Ask and answer questions</u> Opportunities should be given for the children to be able to ask and answer questions about their learning</p> <p><u>Pictures / marks</u> 12 children get into teams of 4 to play a game. How many teams are there?</p> <p style="text-align: center;"></p> <p><u>Informal jottings</u> Solve problems through drawing a</p>

Addition	Subtraction	Multiplication	Division
<p>Using Pictures</p>  <p>Signs and symbols Record own calculations, linked to a practical example</p> $3 + 2 = \square \quad \square = 3 + 2$ $3 + \square = 5 \quad 5 = \square + 2$ $\square + 2 = 5 \quad 5 = 3 + \square$ $\square + \square = 5 \quad 5 = \square + \square$ <p>Children understand that addition can be done in any order</p> <p>They are adding two-digit numbers and ones, then adding tens</p> $12 + 4 = \square$ $12 + 10 = \square$ <p>They will move towards adding 2 two-digit numbers</p> $14 + 12 = \square$ <p>Record a partitioned number as a number sentence Eg $17 = 10 + 7$</p>	<p>matters.</p> <p>They are working with both one, and two-digit numbers</p> <p>Number lines Children then begin to use numbered lines to support their own calculations - “count back” in ones.</p> <p>Counting on <i>the difference between 7 and 11</i></p>  <p>Recording by</p> <ul style="list-style-type: none"> - drawing jumps on prepared lines - constructing own lines <p>Finding the difference using cubes / materials / toys etc and recording as a calculation.</p> <p>The number line should also be used to show that $6 - 3$ means the ‘difference between 6 and 3’ or ‘the difference between 3 and 6’ and how many jumps they are apart.</p> <p>100 square The children will also be shown the 100 square as an alternative method</p>	<p>different sizes</p> <p>Doubling Make 2 sets of objects, each with the same number in</p> <p>Know the doubles of numbers to 10</p> <p>Measures and money Children’s skills should be developed in the context of measures, or money, alongside numbers</p> <p>Problem solving Children should have the opportunity to discuss and solve simple problems using concrete objects and pictorial representations, and to explain their choices and decisions</p> <p>Practical Examples</p> <ul style="list-style-type: none"> • Sort objects into groups to count and represent as a picture • Investigating multiples by grouping, arranging and sorting... Eggs in a box Corners on squares 	<p>diagram E.g. 15 children sit at 3 tables. How many children are at each table if there is the same number at each?</p> <p>Halving One of 2 equal parts of an object, shape or quantity</p> <p>Know halves of number to 20</p> <p>Simple fractions Share sets of objects into equal groups (2, 4)</p> <p>Find $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ of a shape or quantity</p> <p>Begin to use vocabulary related to fractions</p> <p>Measures and money Children’s skills should be developed in the context of measures, or money, alongside numbers</p> <p>Problem solving Children should have the opportunity to discuss and solve simple problems using concrete objects and pictorial representations, and to explain their</p>

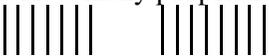
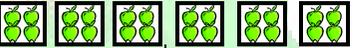
Addition	Subtraction	Multiplication	Division
<p>Number lines “Counting on” using a number line</p> <p>$7 + 4$</p>  <p>Leading to counting on mentally, keeping the largest number in your head.</p> <p>Recording by drawing jumps on prepared lines Children then begin to use numbered lines to support their own calculations</p> <p>100 square Children will also be shown how to use the 100 square</p>  <p>Adding 10 to a number can be shown by one jump directly below the starting number Adding a larger number is split into jumps of 10 and then single jumps for the units Some support may be needed if the calculation moves across the tens number (23 + 9)</p>	 <p>Taking away 10 from a number can be shown by one jump directly above the starting number A larger number is split into jumps of 10 and then single jumps back for the units</p> <p>Empty numberlines Children will begin to use empty number lines to support calculations.</p> <p>Counting back:</p> <ul style="list-style-type: none"> • First counting back in tens and ones. <p>$47 - 23 = 24$</p>  <ul style="list-style-type: none"> • Then helping children to become more efficient by subtracting the units in one jump (by using the known fact $7 - 3 = 4$). 	<ul style="list-style-type: none"> • Children use practical equipment , such as 10ps or straws bundled in tens, to consolidate the count • ‘I have three pairs of socks in my basket. How many socks is this?’ 	<p>choices and decisions</p>

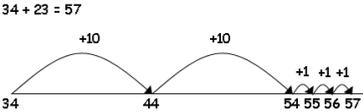
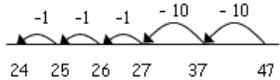
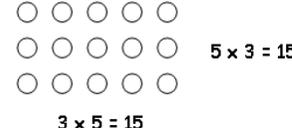
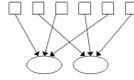
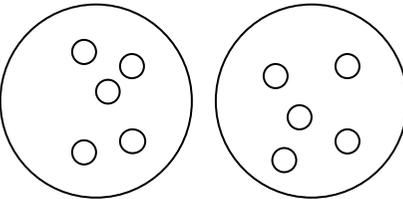
Addition	Subtraction	Multiplication	Division
<p><u>Empty numberlines</u> Children will begin to use ‘empty number lines’ themselves starting with the larger number and counting on.</p> <ul style="list-style-type: none"> • First counting on in tens and ones. <p>$34 + 23 = 57$</p>  <ul style="list-style-type: none"> • Then helping children to become more efficient by adding the units in one jump <p>$34 + 23 = 57$</p>  <p><u>Pairs totalling ten or twenty</u> (“Hiding helpers”) Encourage the children to look for number bonds that they know $4 + 3 + 6 + 2 = 10 + 5$</p>  <p><u>Informal jottings</u> ‘Can you write/draw on paper to show that....?’</p> <p>Use diagrams to solve problems involving addition</p>	<p>$47 - 23 = 24$</p>  <ul style="list-style-type: none"> • Subtracting the tens in one jump and the units in one jump. <p>$47 - 23 = 24$</p>  <p><u>Informal jottings</u> Can you write/draw on paper to show that....?’</p> <p>Use diagrams to solve problems involving subtraction</p> <p><u>Measures and money</u> Children’s skills should be developed in the context of measures, or money, alongside numbers</p> <p><u>Problem solving</u> Children should have the opportunity to discuss and solve simple problems using concrete objects and pictorial representations, and to explain their choices and decisions</p>		

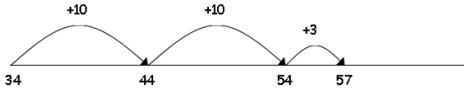
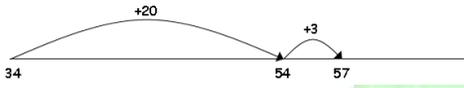
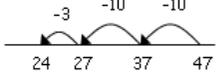
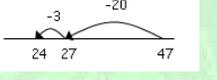
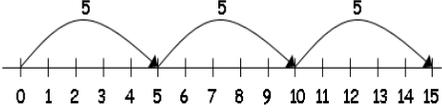
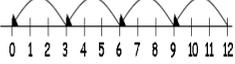
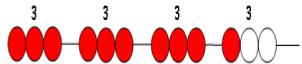
Addition	Subtraction	Multiplication	Division
<p><u>Measures and money</u> Children's skills should be developed in the context of measures, or money, alongside numbers</p> <p><u>Problem solving</u> Children should have the opportunity to discuss and solve simple problems using concrete objects and pictorial representations, and to explain their choices and decisions</p> <p><u>Practical examples</u></p> <ul style="list-style-type: none"> • Record coins which might be used to 'pay' and 'give change' • Record spots on blank dominoes to show addition sentences • Use hundred square to add multiples of ten • Find different ways of putting 11 spots on three ladybirds. • Partner games 	<p><u>Practical Examples</u></p> <ul style="list-style-type: none"> • Use of appropriate number lines / 100 squares to count back • Using fingers to take some away • Partner games 		

Year 2

Previous Learning: The children will be able to read and write numbers to at least 100, and compare and order numbers from 0 to 100. They must be able to recognise the place value of each digit in a two-digit number, count forwards and backwards, using steps of various sizes from any number. They must recall and use addition and subtraction facts to 20 fluently, in order to derive and use related facts to 100.

Addition	Subtraction	Multiplication	Division
<p>Children should be developing the ability to add mentally a one-digit number or multiple of ten, to any two-digit number</p> <p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>Children should be made aware of the different vocabulary related to addition, and to use and understand a variety of different words</p> <p><u>Pictures / marks</u> There are 7 people on the bus. 8 more get on. How many people are on the bus now? </p> <p><u>Signs and symbols</u> Children should use +, -, x, ÷ and = to</p>	<p>Children should be developing the ability to subtract mentally a one-digit number or multiple of ten, to any two-digit number</p> <p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>Children should be made aware of the different vocabulary related to subtraction, and to use and understand a variety of different words</p> <p><u>Pictures / marks</u> There were 17 bean bags in a bucket. Luke took 9. How many are in the bucket? </p> <p><u>Signs and symbols</u> Children should use +, -, x, ÷ and = to record and interpret number sentences</p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>Children should be made aware of the different vocabulary related to multiplication, and to use and understand a variety of different words</p> <p><u>Pictures / marks</u> There are 6 apples in a box, this is an array of 2 x 3  Can you draw an array 4 x 3? There are 4 apples in one box. How many apples in 6 boxes? </p> <p><u>Signs and symbols</u></p>	<p><u>Vocabulary</u> Please refer to vocabulary booklet in classroom</p> <p>Children should be made aware of the different vocabulary related to division, and to use and understand a variety of different words</p> <p><u>Pictures / marks</u> Sharing: Can you share 6 bananas equally between 2 monkeys? Grouping: Can you group 12 eggs into equal groups? 4 eggs fit in a box. How many boxes would you need to pack 20 eggs? </p> <p><u>Signs and symbols</u> Children should use +, -, x, ÷ and = to</p>

Addition	Subtraction	Multiplication	Division
<p>record and interpret number sentences</p> $5 + 4 = \quad \quad = 5 + 4$ $5 + \quad = 9 \quad \quad 9 = \quad + 4$ $\quad + 4 = 9 \quad \quad 9 = 5 + \quad$ $\quad + \quad = 9 \quad \quad 9 = \quad + \quad$ <p>Adding three numbers $1 + \quad + 5 = 17$</p> <p>Extend to $14 + 5 = 10 + \quad$</p> <p>Record a partitioned number as a calculation eg $53 = 40 + 13$ or $30 + 23$</p> <p>Children should know that addition can be done in any order</p> <p>Number lines Children will use 'empty number lines' themselves starting with the larger number and counting on.</p> <ul style="list-style-type: none"> Counting on in tens and ones.  <p>$34 + 23 = 57$</p> <ul style="list-style-type: none"> The children will become more efficient by adding the units in one jump (by using the known fact $4 + 3 = 7$). 	<p>$9 - 4 = \quad \quad = 9 - 4$</p> $9 - \quad = 5 \quad \quad 5 = \quad - 4$ $\quad - 4 = 5 \quad \quad 5 = 9 - \quad$ $\quad - \quad = 5 \quad \quad 5 = \quad - \quad$ <p>Extend to $14 + 5 = 20 - \quad$</p> <p>They must know that the digest number must go first</p> <p>Number lines Children will use empty number lines to support calculations.</p> <p>Counting back:</p> <ul style="list-style-type: none"> Counting back in tens and ones.  <p>$47 - 23 = 24$</p> <ul style="list-style-type: none"> The children will become more efficient by subtracting the units in one jump (by using the known fact $7 - 3 = 4$). 	<p>Children should use $+$, $-$, \times, \div and $=$ to record and interpret number sentences</p> $6 \times 2 = \quad \quad = 2 \times 6$ $6 \times \quad = 12 \quad \quad 12 = \quad \times 6$ $\quad \times 2 = 12 \quad \quad 12 = 2 \times \quad$ $\quad \times \quad = 12 \quad \quad 12 = \quad \times \quad$ <p>Extend to $4 \times 5 = 10 \times \quad$</p> <p>Informal jottings Children will develop their understanding of multiplication and use jottings to support calculation:</p> <ul style="list-style-type: none"> Arrays Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.  <p>Repeated addition</p>	<p>record and interpret number sentences</p> $12 \div 2 = \quad \quad = 12 \div 2$ $12 \div \quad = 6 \quad \quad 6 = \quad \div 2$ $\quad \div 2 = 6 \quad \quad 6 = 12 \div \quad$ $\quad \div \quad = 6 \quad \quad 6 = \quad \div \quad$ <p>Extend to $15 - 10 = 10 \div \quad$</p> <p>Informal jottings Children will develop their understanding of division and use jottings to support calculation</p> <ul style="list-style-type: none"> Sharing equally 6 sweets shared between 2 people, how many do they each get?  <p>Sharing $10 \div 2$</p>  <p>Grouping $10 \div 2 =$</p>

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<p>$34 + 23 = 57$</p>  <ul style="list-style-type: none"> Adding the tens in one jump and the units in one jump. <p>$34 + 23 = 57$</p>  <ul style="list-style-type: none"> Bridging through ten can help children become more efficient. <p>100 square Children will continue to be shown addition on the 100 square Making (repeated) jumps of 10 down and then adding units</p> <table border="1" data-bbox="145 949 421 1157"> <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><i>Children will be encouraged to choose which method (numberline/100 square) may be more appropriate for the calculation that they are doing</i></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	<p>$47 - 23 = 24$</p>  <ul style="list-style-type: none"> Subtracting the tens in one jump and the units in one jump. <p>$47 - 23 = 24$</p>  <p>Extension: $97 - 95 =$ Where numbers are close together it is more efficient to count on from the smaller number to find the difference.</p> <p>100 square Children will continue to be shown addition on the 100 square Making (repeated) jumps of 10 up and then subtracting units</p> <table border="1" data-bbox="660 1013 918 1204"> <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><i>Children will be encouraged to choose which method (numberline/100 square) may be more appropriate for the calculation that they are doing</i></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	<p>$2 \times 4 = 2 + 2 + 2 + 2$</p> <p>Repeated addition can be shown easily on a number line:</p> <p>$5 \times 3 = 5 + 5 + 5$</p>  <ul style="list-style-type: none"> Commutativity Children should know that 3×5 has the same answer as 5×3. <p>Children should be able to count in 2s, 5s and 10s then develop rapid recall and be able to use multiplication facts for 2, 5 and 10</p> <p>Doubling Know doubles of numbers to 20 (and more) including how to partition bigger numbers to double them</p> <p>Measures and money Children's skills should be developed in the context of measures, or money, alongside numbers</p> <p>Problem solving Children should apply their increasing</p>	<table border="1" data-bbox="1691 247 2128 311"> <tr><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td></tr> <tr><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td></tr> </table> <ul style="list-style-type: none"> Repeated subtraction using a number line $12 \div 3 = 4$   <p>The bead bar will help children with interpreting division calculations such as $10 \div 5$ as 'how many 5s make 10?'</p> <ul style="list-style-type: none"> Using symbols to stand for unknown numbers to complete equations using inverse operations <p>$\square \div 2 = 4$ $20 \div \triangle = 4$ $\square \div \triangle = 4$</p> <p>Children should develop rapid recall and</p>	O	O	O	O	O	O	O	O	O	O
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<p><u>Informal jottings</u> Partition into tens and ones and recombine</p> $23 + 12 = 20 + 10$ $= 3 + 2$ $= 30 + 5$ <p>Children should use practical and informal written methods to add two-digit numbers</p> <p><u>Pairs totalling ten or twenty (“Hiding helpers”)</u> Children to recall number facts that they already know</p> $4 + 8 + 16 + 2 = 20 + 10$ $= 30$ <p><u>Explaining in words</u> To add 23 and 17 I added 23 and 7 to make 30 and added 10 more to total 40</p> <p><u>Measures and money</u> Children’s skills should be developed in the context of measures, or money, alongside numbers</p>	<p><u>Informal jottings</u></p> $37 - 12 = 37 - 10 - 2$ $37 - 10 = 27$ $27 - 2 = 25$ <p>Children should use practical and informal written methods to subtract two-digit numbers</p> <p><u>Explaining in Words</u> Children can find differences in practical situations</p> <p>Use of 100 square to support counting back in tens</p> $50 - 29$ <p>I did 50 take away 30 then added 1.</p> <p><u>Measures and money</u> Children’s skills should be developed in the context of measures, or money, alongside numbers</p> <p><u>Problem solving</u> Children should apply their increasing knowledge of mental and written methods</p> <p>Children should have the opportunity to discuss and solve simple problems using</p>	<p>knowledge of mental and written methods</p> <p>Children should have the opportunity to discuss and solve simple problems using concrete objects and pictorial representations, and to explain their choices and decisions</p> <p>They must begin to recognise, and use, the inverse relationship between multiplication and division, and use this to check calculations and solve missing number problems</p>	<p>be able to use multiplication facts for 2, 5 and 10</p> <p>Children must know that division cannot be done in any order</p> <p><u>Halving</u> Practical tasks involving folding / colouring shapes and sharing objects.</p> <p>One of 2 equal parts of an object, shape or quantity</p> <p>Know halves of numbers to 20 and more</p> <p><u>Simple fractions</u> Share sets of objects into equal groups (2, 3 and 4)</p> <p>Recognise, name and write fractions $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$ and $\frac{3}{4}$ of a whole</p> <p>Begin to use vocabulary related to fractions</p> <p><u>Measures and money</u> Children’s skills should be developed in the context of measures, or money, alongside numbers</p> <p><u>Problem solving</u> Children should apply their increasing knowledge of mental and written methods</p> <p>Children should have the opportunity to</p>

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<p>Problem solving Children should apply their increasing knowledge of mental and written methods</p> <p>Children should have the opportunity to discuss and solve simple problems using concrete objects and pictorial representations, and to explain their choices and decisions</p> <p>They must recognise and use the inverse relationship between addition and subtraction, and use this to check calculations and solve missing number problems</p> <p>They should present solutions to puzzles and problems in an organised way, explaining their methods and results in spoken or written form, using mathematical language</p>	<p>concrete objects and pictorial representations, and to explain their choices and decisions</p> <p>They must recognise and use the inverse relationship between addition and subtraction, and use this to check calculations and solve missing number problems</p>		<p>discuss and solve simple problems using concrete objects and pictorial representations, and to explain their choices and decisions</p> <p>They must begin to recognise, and use, the inverse relationship between multiplication and division, and use this to check calculations and solve missing number problems</p>