



## **Calculation Guidance**

(as part of whole school approach to STEM)

The following calculation guidance has been devised to meet the requirements of the National Curriculum 2014 for the teaching and learning of Mathematics, and is also designed to give pupils a consistent and smooth progression of learning calculations across the school. The early number skills in learning and calculation in Foundation 1 and Foundation 2 follows the EYFS Curriculum.







The calculation guidance is organised according to age stage expectations as set out in the National Curriculum 2014, **however it is vital that pupils are taught to the stage that they are currently working at**, progressing onto the next stage as soon as they are ready, or working at a lower stage until they are secure enough in the level to move on.

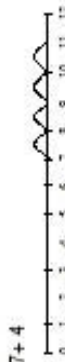



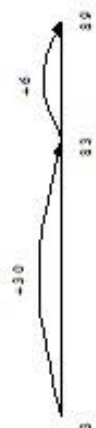

It is important that any type of calculation is given a real-life context or problem-solving approach to help build children's understanding of the purpose of calculation, and to help them to recognise when to use each operation and methods when faced with problems. This must be a priority within maths lessons.

Children need to be taught and encouraged to use the most appropriate method; whether it be a mental strategy, using jottings or an efficient written method to be able to solve a calculation depending on its difficulty.

Reviewed August 2020 NH


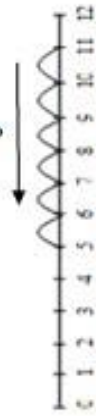
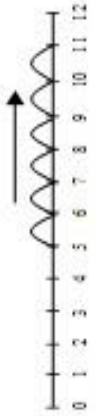

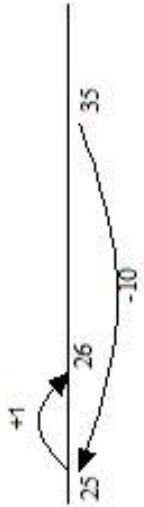

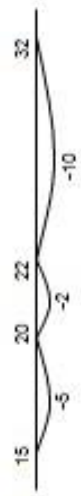


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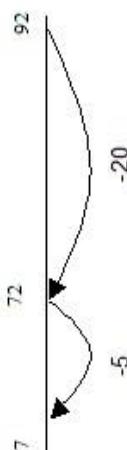
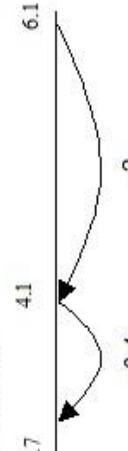

Calculation Guidelines for Foundation Stage			
ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
Children begin to record in the context of play or practical activities and problems.			
<p>Begin to relate addition to combining two groups of objects, matching numeral and quantity.</p> <ul style="list-style-type: none"> <li>• Make a record in pictures, words or symbols of addition activities already carried out.</li> <li>• Construct number sentences to go with practical activities</li> <li>• Use of games, songs and practical activities to begin using vocabulary</li> <li>• Solve simple word problems using their fingers and resources</li> </ul> <div data-bbox="885 1960 965 2116">  </div> <p><math>5 + 1 = 6</math></p> <p>Can find one more to ten.</p> <p>The children will progress to using a number line. They jump forwards along the number line using their finger.</p> <div data-bbox="1284 1668 1444 2116">  <p><math>5 + 3 = 8</math></p> </div>	<p>Begin to relate subtraction to 'taking away'</p> <ul style="list-style-type: none"> <li>• Make a record in pictures, words or symbols of subtraction activities already carried out</li> <li>• Use of games, songs and practical activities to begin using vocabulary</li> <li>• Construct number sentences to go with practical activities</li> <li>• Relate subtraction to taking away and counting how many objects are left.</li> </ul> <div data-bbox="869 1355 965 1601">  </div> <p><math>5 - 1 = 4</math></p> <div data-bbox="1013 1377 1061 1590">  </div> <p><math>5 - 1 = 4</math></p> <p>Can find one less to ten.</p> <p>The children will progress to counting backwards along a number line using finger.</p> <div data-bbox="1364 1243 1492 1601">  <p><math>8 - 3 = 5</math></p> </div>	<p>Real life contexts and use of practical equipment to count in repeated groups of the same size:</p> <ul style="list-style-type: none"> <li>• Count in twos; fives; tens</li> </ul> <p>Also chanting in 2s, 5s and 10s.</p> <div data-bbox="742 817 949 1131">  </div>	<p>Share objects into equal groups</p> <p>Use related vocabulary</p> <p>Activities might include:</p> <ul style="list-style-type: none"> <li>• Sorting activities with people/compare bears</li> <li>• Separate a given number of objects into two groups (addition and subtraction objective in reception being preliminary to multiplication and division)</li> <li>• Discussion relating to sharing objects/toys between groups of children</li> <li>• Splitting shapes into two halves</li> </ul>

ADDITION GUIDELINES		
Year One	Year Two	Year Three
<p><b>+ = signs and missing numbers</b></p> <p>Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'.</p> $2 = 1 + 1$ $2 + 3 = 4 + 1$ $3 = 3$ $2 + 2 + 2 = 4 + 2$ <p>Missing numbers need to be placed in all possible places to enable the children to find and understand the relationship between number facts</p> $3 + 4 = \square$ $3 + \square = 7$ $\square + 4 = 7$ $\square + \nabla = 7$ $\square = 3 + 4$ $7 = \square + 4$ $7 = 3 + \square$ $7 = \square + \nabla$ <p><b>The Number Line</b></p> <p>Children use a numbered line to count on in ones.</p> <p>Children use number lines and practical resources to support calculation and teachers demonstrate the use of the number line.</p>  <p>7 + 4</p> <p>Children to add one and two digit numbers up to 20. They will memorise and reason with number bonds up to 10 and 20 and understand the effect of adding 0.</p> <p>The children will progress to adding mentally by putting the larger number in their head and counting on with their fingers. They will begin to partition two digit numbers into tens and units e.g. <math>23 = 20 + 3</math>.</p>	<p><b>+ = signs and missing numbers</b></p> <p>Continue using a range of equations as in Year 1 but with appropriate, larger numbers.</p> <p>Extend to</p> $14 + 5 = 10 + \square \text{ and } 32 + \square + \square = 100$ $35 = 1 + \square + 5$ <p><b>Partition into tens and ones and recombine</b></p> $12 + 23 = 10 + 2 + 20 + 3$ $= 30 + 5$ $= 35$ <p><b>Count on in tens and ones</b></p> $23 + 12 = 23 + 10 + 2$ $= 33 + 2$ $= 35$  <p><b>Partitioning and bridging through 10.</b></p> <p>The steps in addition often bridge through a multiple of 10 e.g.</p> <p>Children should be able to partition the 7 to relate adding the 2 and then the 5.</p> $8 + 7 = 15$  <p><b>Add 9 or 11 by adding 10 and adjusting by 1</b></p> <p>e.g.</p> $\text{Add 9 by adding 10 and adjusting by 1}$ $35 + 9 = 44$  <p><b>Written Method</b></p> <p>Children will begin to add a two digit to a one digit number, then a two digit to two digit number using expanded column addition in the summer term.</p> <p><b>Method 1</b></p> $36 + 41 =$ $\begin{array}{r} 30 + 6 \\ 40 + 1 \\ \hline 70 + 7 = 77 \end{array}$ <p><b>Method 2</b></p> $36 + 45 = 36$ $\begin{array}{r} + 45 \\ \hline 11 \\ 70 \\ \hline 81 \end{array}$	<p><b>+ = signs and missing numbers</b></p> <p>Continue using a range of equations as in Year 1 and 2 but with appropriate, larger numbers.</p> <p><b>Partition into tens and ones</b></p> <ul style="list-style-type: none"> <li>Partition both numbers and recombine.</li> <li>Count on by partitioning the second number only e.g.</li> </ul> $36 + 53 = 53 + 30 + 6$ $= 83 + 6$ $= 89$  <p><b>Add a near multiple of 10 to a two-digit number</b></p> <p>Secure mental methods by using a number line to model the method. Continue as in Year 2 but with appropriate numbers</p> <p>e.g. <math>35 + 19</math> is the same as <math>35 + 20 - 1</math>.</p> <p>Children need to be secure adding multiples of 10 to any two-digit number including those that are not multiples of 10.</p> $48 + 36 = 84$  <p><b>Written Method</b></p> $83 + 42 = 125$ <p>Children will use the formal column method to add numbers with up to three digits. When carrying a tens digit they will place the digit underneath the calculation. Revert to expanded methods if the children experience any difficulty.</p> <p><b>1. Column Addition</b></p> $\begin{array}{r} 83 \\ + 42 \\ \hline 125 \end{array}$ $\begin{array}{r} 729 \\ + 58 \\ \hline 787 \end{array}$


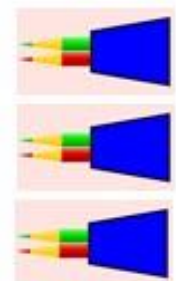
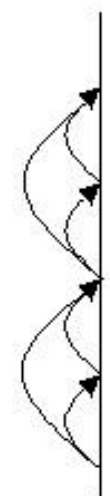




ADDITION GUIDELINES		
Year Four	Year Five	Year Six
<p><b><u>+ = signs and missing numbers</u></b> Continue using a range of equations as in Year 1 and 2 but with appropriate numbers.</p> <p><b><u>Add the nearest multiple of 10, then adjust</u></b> Continue as in Year 2 and 3 but with appropriate numbers e.g. <math>63 + 29</math> is the same as <math>63 + 30 - 1</math></p> <p><b><u>Written Method</u></b> Children to continue to use formal column method for addition with numbers containing up to four digits.</p> $\begin{array}{r} 1367 \\ +2185 \\ \hline 3552 \\ 11 \end{array}$ <p><math>1367 + 2185 = 3552</math></p> <p>Revert to expanded methods if the children experience any difficulty.</p>	<p><b><u>+ = signs and missing numbers</u></b> Continue using a range of equations as in Year 1 and 2 but with appropriate numbers.</p> <p><b><u>Add or subtract the nearest multiple of 10 or 100, then adjust</u></b> Continue as in Year 2, 3 and 4 but with appropriate numbers e.g. <math>458 + 79 =</math> is the same as <math>458 + 80 - 1</math></p> <p><b><u>Written Method</u></b> Extend to numbers with at least five digits <math>43587 + 675 = 44262</math></p> $\begin{array}{r} 43587 \\ + 675 \\ \hline 44262 \\ 111 \end{array}$ <p>Revert to expanded methods if the children experience any difficulty. Extend to up to two places of decimals (same number of decimals places) and adding several numbers (with different numbers of digits).</p> $\begin{array}{r} 72.8 \\ +54.6 \\ \hline 127.4 \\ 11 \end{array}$	<p><b><u>+ = signs and missing numbers</u></b> Continue using a range of equations as in Year 1 and 2 but with appropriate numbers.</p> <p><b><u>Add the nearest multiple of 10, 100 or 1000, then adjust</u></b> Continue as in Year 2, 3, 4 and 5 but with appropriate numbers including extending to adding 0.9, 1.9, 2.9 etc</p> <p><b><u>Written Method</u></b> Extend to numbers with any number of digits and decimals with 1, 2 and/or 3 decimal places. <math>13.86 + 9.481 = 23.341</math></p> $\begin{array}{r} 13.86 \\ + 9.481 \\ \hline 23.341 \\ 111 \end{array}$ <p>Revert to expanded methods if the children experience any difficulty.</p>

SUBTRACTION GUIDELINES		
Year One	Year Two	Year Three
<ul style="list-style-type: none"> <li>Understand subtraction as 'take away'</li> </ul>  <ul style="list-style-type: none"> <li>Use practical and informal written methods to support the subtraction of a one-digit number from a one-digit or two-digit number and a multiple of 10 from a two-digit number.</li> </ul> <p>I have 11 toy cars. There are 6 cars too many to fit in the garage. How many cars fit in the garage?</p>  <p>Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences</p> <p>Recording by</p> <ul style="list-style-type: none"> <li>- drawing jumps on prepared number lines</li> <li>- constructing own number lines</li> </ul> <p>= signs and missing numbers</p> $\begin{array}{l} 7 - 3 = \square \\ 7 - \square = 4 \\ \square - 3 = 4 \\ \square - \nabla = 4 \end{array} \quad \begin{array}{l} \square = 7 - 3 \\ 4 = \square - 3 \\ 4 = 7 - \square \\ 4 = \square - \nabla \end{array}$ <ul style="list-style-type: none"> <li>Find a 'difference' by counting up:</li> </ul> <p>I have saved 5p. The socks that I want to buy cost 11p. How much more do I need in order to buy the socks?</p> 	<ul style="list-style-type: none"> <li>= signs and missing numbers</li> </ul> <p>Continue using a range of equations as in Year 1 but with appropriate numbers.</p> <p>Extend to <math>14 + 5 = 20 - \square</math></p> <p>Find a small difference by counting up</p> $42 - 39 = 3$ <p>+1 +2</p>  <p>39 40 42</p> <p>Subtract 9 or 11. Begin to add/subtract 19 or 21</p> $35 - 9 = 26$ <p>+1 -10</p>  <p>25 26 35</p> <p>Use known number facts and place value to subtract (partition second number only)</p> $\begin{array}{l} 37 - 12 = 37 - 10 - 2 \\ = 27 - 2 \\ = 25 \end{array}$  <p>25 27 37</p> <p>Bridge through 10 where necessary</p> $32 - 17$  <p>15 20 22 32</p> <p>Written Methods</p> <p>In the summer term, the children will use the simple written column method to subtract without borrowing.</p>	<ul style="list-style-type: none"> <li>= signs and missing numbers</li> </ul> <p>Continue using a range of equations as in Year 1 and 2 but with appropriate numbers.</p> <p>Find a small difference by counting up</p> <p>Continue as in Year 2 but with appropriate numbers e.g. <math>102 - 97 = 5</math></p> <p>Subtract mentally a 'near multiple of 10' or from a two-digit number</p> <p>Continue as in Year 2 but with appropriate numbers e.g. <math>78 - 49</math> is the same as <math>78 - 50 + 1</math></p> <p>Use known number facts and place value to subtract</p> <p>Continue as in Year 2 but with appropriate numbers e.g. <math>97 - 15 = 82</math></p>  <p>82 87 97</p> <p>With practice, children will need to record less information and decide whether to count back or forward. It is useful to ask children whether counting up or back is the more efficient for calculations such as <math>57 - 12</math>, <math>86 - 77</math> or <math>43 - 28</math>.</p> <p>Written Methods</p> <p>Complementary addition</p> $84 - 56 = 28$ <p>+4 +20 +4</p>  <p>56 60 80 84</p> <p>Children to use formal column method for subtraction with numbers with up to three digits.</p> $786 - 54 = 732$ $\begin{array}{r} 786 \\ - 54 \\ \hline 732 \end{array}$






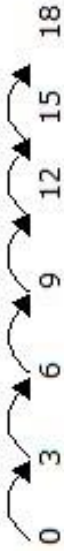

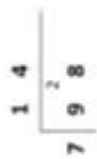
SUBTRACTION GUIDELINES (- = signs and missing numbers: Continue using a range of equations as in Year 1 and 2 but with appropriate numbers.)			
Year Four	Year Five	Year Six	
<p><b>Find a small difference by counting up</b> e.g. <math>5003 - 4996 = 7</math> This can be modelled on an empty number line (see complementary addition below). Children should be encouraged to use known number facts to reduce the number of steps.</p> <p><b>Subtract the nearest multiple of 10, then adjust.</b> Continue as in Year 2 and 3 but with appropriate numbers.</p> <p><b>Use known number facts and place value to subtract</b> <math>92 - 25 = 67</math></p>  <p><b>Written Method</b></p> <p>Children to subtract numbers with up to four digits using the formal column method for subtraction.</p> $\begin{array}{r} 932 - 457 \text{ becomes} \\ \begin{array}{r} 8 \quad 12 \quad 1 \\ 9 \quad 3 \quad 2 \\ - 4 \quad 5 \quad 7 \\ \hline 4 \quad 7 \quad 5 \end{array} \end{array}$ <p>They will use exchanging strategy and make adjustments to the calculation at the top of the sum.</p> <p><b>Answer: 475</b></p>	<p><b>Find a difference by counting up</b> e.g. <math>8006 - 2993 = 5013</math> This can be modelled on an empty number line (see complementary addition below).</p> <p><b>Subtract the nearest multiple of 10 or 100, then adjust.</b> Continue as in Year 2, 3 and 4 but with appropriate numbers.</p> <p><b>Use known number facts and place value to subtract</b> <math>6.1 - 2.4 = 3.7</math></p>  <p><b>Written Method</b></p> <p>Children to subtract numbers with more than four digits using the formal column method for subtraction. They will subtract decimals with mixed places.</p>	<p><b>Find a difference by counting up</b> e.g. <math>8000 - 2785 = 5215</math> To make this method more efficient, the number of steps should be reduced to a minimum through children knowing:</p> <ul style="list-style-type: none"> <li>Complements to 1, involving decimals to two decimal places (<math>0.16 + 0.84</math>)</li> <li>Complements to 10, 100 and 1000</li> </ul> <p><b>Subtract the nearest multiple of 10, 100 or 1000, then adjust</b> Continue as in Year 2, 3, 4 and 5 but with appropriate numbers.</p> <p><b>Use known number facts and place value to subtract</b> <math>0.5 - 0.31 = 0.19</math></p>  <p><b>Written Method</b></p> <p>Children to subtract numbers with increasingly large and more complex numbers and decimal values using the formal column method for subtraction.</p>	




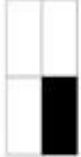


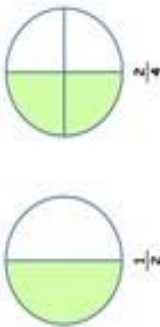
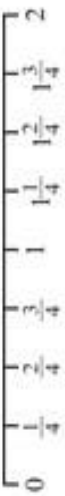

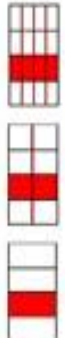
MULTIPLICATION GUIDELINES																												
Year One	Year Two	Year Three																										
<p><b>Arrays and repeated addition</b> Multiplication is related to repeated addition and counting groups of the same size.</p> <div></div> <p>Looking at columns <math>2 + 2 + 2</math> 3 groups of 2</p> <p>Looking at rows <math>3 + 3</math> 2 groups of 3</p> <p>Counting using a variety of practical resources Counting in 2s e.g. counting socks, shoes, animal's legs... Counting in 5s e.g. counting fingers, fingers in gloves, toes... Counting in 10s e.g. fingers, toes...</p> <p><b>Pictures / marks</b> The children are encouraged to draw pictures to aid their understanding. e.g. There are 2 pencils in each pot. How many pencils are there in 3 pots?</p> <div></div> <p><math>3 \times 2 = 6</math></p> <p>The children are taught to count in multiples using their fingers e.g. <math>4 \times 10 = 10, 20, 30, 40</math></p>	<p><b>x = signs and missing numbers</b> <math>7 \times 2 = \square</math> <math>7 \times \square = 14</math> <math>\square \times 2 = 14</math> <math>\square \times 7 = 14</math></p> <p><math>\square = 2 \times 7</math> <math>14 = \square \times 7</math> <math>14 = 2 \times \square</math> <math>14 = \square \times 7</math></p> <p><b>Arrays and repeated addition</b> Continue to understand multiplication as repeated addition and continue to use arrays where necessary.</p> <p><b>Doubling multiples of 5 up to 50</b> <math>35 \times 2 = 70</math></p> <p><b>Partition</b></p> <div></div> <p><math>2 \times 4</math> or <math>2 + 2 + 2 + 2</math></p> <p><math>4 \times 2</math> or <math>4 + 4</math></p> <p><b>Partition</b> Children need to be secure with partitioning numbers into 10s and 1s and partitioning in different ways: <math>6 = 5 + 1</math> so e.g. Double 6 is the same as double five add double one.</p> <div></div> <p>AND double 15 <math>10 + 5</math> <math>\downarrow \quad \downarrow</math> <math>20 + 10 = 30</math></p> <p>OR</p> <table><tr><td>X</td><td>10</td><td>5</td></tr><tr><td>2</td><td>20</td><td>10</td></tr><tr><td></td><td></td><td>30</td></tr></table> <p>Pupils are introduced to the multiplication tables. They practise to become fluent in the 2, 5 and 10 multiplication tables and connect them to each other.</p>	X	10	5	2	20	10			30	<p><b>x = signs and missing numbers</b> Continue using a range of equations as in Year 2 but with appropriate numbers.</p> <p><b>Arrays and repeated addition</b> Continue to understand multiplication as repeated addition and continue to use arrays where necessary.</p> <p><b>Doubling multiples of 5 up to 50</b> <math>35 \times 2 = 70</math></p> <p><b>Partition</b></p> <table><tr><td>X</td><td>30</td><td>5</td></tr><tr><td>2</td><td>60</td><td>10</td></tr><tr><td></td><td></td><td>70</td></tr></table> <p>Use known facts and place value to carry out simple multiplications. Children to recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Through doubling, they connect the 2, 4 and 8 multiplication tables.</p> <p><b>Written Methods</b> Children will use the short multiplication method for multiplying a 2 digit number by a 1 digit number. They will carry the tens digit underneath the calculation.</p> <table><tr><td>22</td><td>58</td></tr><tr><td><math>\times 3</math></td><td><math>\times 4</math></td></tr><tr><td>66</td><td>212</td></tr><tr><td></td><td>1</td></tr></table>	X	30	5	2	60	10			70	22	58	$\times 3$	$\times 4$	66	212		1
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MULTIPLICATION GUIDELINES		
Year Four	Year Five	Year Six
<p><b>x = signs and missing numbers</b> Continue using a range of equations as in Year 2 but with appropriate numbers</p> <p><u>Partition</u> Continue to use arrays:</p>  <p><math>18 \times 9 = 162</math></p> <p><math>18 \times 9 = (10 \times 9) + (8 \times 9) = 162</math></p> <p>Children to recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></p> <p><u>Written Methods</u></p> <p>Column method: multiplying 2 and 3 digit numbers by a 1 digit number. Children to carry tens digits underneath the calculation.</p> $\begin{array}{r} 275 \\ \times 6 \\ \hline 1650 \\ 43 \phantom{0} \\ \hline \end{array}$ <p>Children should describe what they do by referring to the actual values of the digits in the columns. For example, the first step in <math>38 \times 7</math> is 'thirty multiplied by seven', not 'three times seven', although the relationship <math>3 \times 7</math> should be stressed.</p> $\begin{array}{r} 38 \\ \times 7 \\ \hline 266 \\ 5 \phantom{0} \\ \hline \end{array}$	<p><u>Partition</u> <math>47 \times 6 = 282</math></p> <p><math>47 \times 6 = (40 \times 6) + (7 \times 6) = 282</math></p> <p>Children to recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math> and use them to derive related facts.</p> <p><u>Written Methods</u></p> <p>Column Method</p> <p>Children to multiply numbers with up to 4 digits by a one- or two-digit number.</p> $\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \\ 42 \phantom{0} \\ \hline \end{array}$ <p>Children to use long multiplication method to multiply a 2 digit number by a 2 digit number.</p> $\begin{array}{r} 64 \\ \times 39 \\ \hline 576 \\ 53 \phantom{0} \\ \hline + 1920 \\ 11 \phantom{0} \\ \hline 2496 \end{array}$ <p>Children to work through calculation, firstly multiplying <math>64 \times 9</math> and then multiplying <math>64 \times 30</math> before adding the totals together. Children will learn to add 0 to second line of sum before multiplying by the tens digit to ensure they have multiplied the answer by the correct amount.</p>	<p><u>Partition</u> <math>87 \times 6 = 522</math></p> <p><math>87 \times 6 = (80 \times 6) + (7 \times 6) = 522</math></p> <p>Children to recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math> and use them to derive related facts.</p> <p><u>Written Methods</u></p> <p>Children will continue to use column method and long multiplication method. Children who are already secure with multiplication for <math>TU \times U</math> and <math>TU \times TU</math> should have little difficulty in using the same method for <math>HTU \times TU</math> or applying decimals.</p> $\begin{array}{r} 286 \\ \times 29 \\ \hline 2574 \\ 5720 \phantom{0} \\ \hline 8294 \\ 1 \phantom{00} \\ \hline \end{array}$ <p><math>(9 \times 286 = 2574)</math> <math>(20 \times 286 = 5720)</math></p>

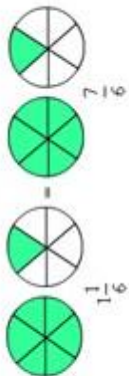


DIVISION GUIDELINES		
Year One	Year Two	Year Three
<p><u>Sharing</u> Requires secure counting skills</p> <p>Sharing – 6 sweets are shared between 2 people. How many do they have each?</p>  <p>Practical activities involving sharing, distributing cards when playing a game, putting objects onto plates, into cups, hoops etc.</p> <p><u>Grouping</u> Sorting objects into 2s / 3s / 4s etc How many pairs of socks are there?</p>  <p>There are 12 tulip bulbs. Plant 3 in each pot. How many pots are there?</p> <p>Jo has 12 Lego wheels. How many cars can she make?</p> <p>The children will begin to write simple division number sentences in the summer term.</p>  <p><math>9 \div 3 = 3</math></p>	<p><u>÷ = signs and missing numbers</u> <math>6 \div 2 = \square</math> <math>6 \div \square = 3</math> <math>\square \div 2 = 3</math> <math>\square \div \square = 3</math></p> <p><u>Grouping</u> Link to counting and understanding number strand Count up to 100 objects by grouping them and counting in tens, fives or twos Find one half, one quarter and three quarters of shapes and sets of objects <math>6 \div 2</math> can be modelled as: There are 6 strawberries. How many people can have 2 each? How many 2s make 6? <math>6 \div 2</math> can be modelled as:</p>  <p>In the context of money count forwards and backwards using 2p, 5p and 10p coins</p> <p>Practical grouping e.g. in PE</p> <p>12 children get into teams of 4 to play a game. How many teams are there?</p>  <p><math>12 \div 4 = 3</math></p>	<p><u>÷ = signs and missing numbers</u> Continue using a range of equations as in Year 2 but with appropriate numbers.</p> <p>Understand division as sharing and grouping <math>18 \div 3</math> can be modelled as: Sharing – 18 shared between 3 (see Year 1 diagram) <b>OR</b> Grouping - How many 3's make 18?</p>  <p><b>Remainders</b> <math>16 \div 3 = 5 \text{ r}1</math> Sharing - 16 shared between 3, how many left over? Grouping - How many 3's make 16, how many left over? e.g.</p>  <p><b>Written Methods</b> Children to begin to use short division method...</p> <p><math>98 \div 7</math> becomes</p>  <p>Answer: 14</p>

DIVISION GUIDELINES		
Year Four	Year Five	Year Six
<p><b>÷ = signs and missing numbers</b> Continue using a range of equations as in Year 2 but with appropriate numbers.</p> <p><b>Sharing and grouping</b> 30 ÷ 6 can be modelled as: grouping – groups of 6 placed on no. line and the number of groups counted e.g.</p> <p>sharing – sharing among 6, the number given to each person</p> <p><b>Remainders</b> 41 ÷ 4 = 10 r1</p> <p>41 = (10 x 4) + 1</p> <p><b>Written Methods</b></p> <p>Children to continue to use short division method and will begin to solve sums involving remainders.</p> <p>432 ÷ 5 becomes</p> <p>Answer: 86 remainder 2</p>	<p><b>Sharing and grouping</b> Continue to understand division as both sharing and grouping (repeated subtraction).</p> <p><b>Remainders</b> Quotients expressed as fractions or decimal fractions 61 ÷ 4 = 15 <math>\frac{1}{4}</math> or 15.25</p> <p><b>Written Methods</b> Children will divide numbers with up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.</p> <p>496 ÷ 11 becomes</p> <p>Answer: 45 <math>\frac{1}{11}</math></p> <p><b>Long Division:</b> Introduce the method in a simple way by limiting the choice of chunks, eg can we use 2 lots? Can we use 10 lots? Encourage children to make a key facts list for the divisor.</p> <p>15 into 3 doesn't go, so look at the next digit. 15 goes into 36 two times, so put a 2 above the 6. 15 x 2 = 30 Take that 30 away from the 36 to get your remainder. 36 - 30 = 6 Next, carry the 4 down to make 64. 15 goes into 64 four times, so put a 4 above the 4. 15 x 4 = 60 Take 60 from the 64 to get your remainder. 64 - 60 = 4 Carry the 0 down to make 40. 15 goes into 40 two times, so put a 2 above the 0. 15 x 2 = 30 Take 30 from the 40 to get your remainder. 40 - 30 = 10</p>	<p><b>Sharing, grouping and remainders as Year Five</b></p> <p><b>Written Methods</b> Children will divide numbers with up to 4 digits by a two-digit number using the formal written method of short division and interpret remainders appropriately for the context.</p> <p>They will divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</p>

FRACTIONS GUIDELINES		
Year One	Year Two	Year Three
<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity. The children place two halves together to make one whole.</p>  <p><math>\frac{1}{2}</math> one-half</p> <p>The children will use doubling facts to help aid their understanding in finding half of a number or set of objects e.g. to find <math>\frac{1}{2}</math> of 8 they would use their doubling knowledge that <math>4 + 4 = 8</math>.</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>   <p>Children should connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as part of a whole. The children will begin to recognise that 2 quarters = the same as a half. They also start to find quarters by halving a number and halving it again using the related doubling fact e.g. to find <math>\frac{1}{4}</math> of 12 <math>\frac{1}{2}</math> of 12 = 6 <math>\frac{1}{2}</math> of 6 = 3</p>	<p>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</p>  <p>Write simple fractions. <math>\frac{1}{2}</math> of 6 = 3 <math>\frac{1}{2}</math> of 10 = 5</p> <p>Recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></p>  <p>Pupils should count in fractions up to 10, starting from any number in quarters and halves using a number line.</p> 	<p>Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</p>  <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</p> <p>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</p> <p>Recognise and show, using diagrams, equivalent fractions with small denominators</p>  <p><math>\frac{1}{4} = \frac{2}{8} = \frac{4}{16}</math></p> <p>Add and subtract fractions with the same denominator within one whole, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math></p> <p>Compare and order unit fractions, and fractions with the same denominators</p> <p>Solve problems that involve all of the above.</p>



FRACTIONS GUIDELINES		
Year Four	Year Five	Year Six
<p>Recognise and show, using diagrams, families of common equivalent fractions</p> <p>Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</p> <p>Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number</p> <p>Add and subtract fractions with the same denominator</p> <p>Recognise and write decimal equivalents of any number of tenths or hundredths</p> <p>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math></p> <p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p>	<p>Compare and order fractions whose denominators are all multiples of the same number</p> <p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements</p> <p><math>2/5 + 4/5 = 6/5 = 1 \frac{1}{5}</math></p>  <p>Add and subtract fractions with the same denominator and denominators that are multiples of the same number</p> <p><math>1/4 + 2/6 = 3/12 + 4/12 = 7/12</math></p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>Read and write decimal numbers and percentages as fractions</p> <p><math>0.71 = 71/100</math>    <math>25\% = \frac{1}{4}</math></p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>Solve problems which require knowing percentage and decimal equivalents of <math>1/2, 1/4, 1/5, 2/5, 4/5</math> and those fractions with a denominator of a multiple of 10 or 25.</p>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>Compare and order fractions, including fractions <math>&gt; 1</math></p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form</p> <p><math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math></p> <p>Divide proper fractions by whole numbers</p> <p><math>1/3 \div 2 = 1/6</math></p> <p>Associate a fraction with division and calculate decimal fraction equivalents</p> <p><math>0.375 = 3/8</math></p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>