



Calculations Policy

All written calculations are only introduced when the children have a firm grasp of a range of mental calculation strategies. The year group suggestions are guidance only.

ADDITION

Year 3											
Informal jottings recording counting on in multiples of 100, 10 or 1. $67 + 48 = 67 + 40 + 8$ $= 107 + 8$ $= 115$ <hr style="border-top: 1px dashed black;"/> <div style="display: flex; justify-content: space-between; width: 100%;"> 67 107 110 115 </div>	Expanded form of vertical addition adding the tens first then the units first. <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right; padding-right: 20px;">67</td> <td style="text-align: right;">67</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;"><u>+ 48</u></td> <td style="text-align: right;"><u>+48</u></td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">100</td> <td style="text-align: right;">15</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;"><u>15</u></td> <td style="text-align: right;"><u>100</u></td> </tr> <tr> <td style="text-align: right; padding-right: 20px;"><u>115</u></td> <td style="text-align: right;"><u>115</u></td> </tr> </table>	67	67	<u>+ 48</u>	<u>+48</u>	100	15	<u>15</u>	<u>100</u>	<u>115</u>	<u>115</u>
67	67										
<u>+ 48</u>	<u>+48</u>										
100	15										
<u>15</u>	<u>100</u>										
<u>115</u>	<u>115</u>										

Year 4												
Expanded form of vertical addition adding the units first. <table style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: right; padding-right: 20px;">67</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>+48</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;">15</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>100</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>115</u></td></tr> </table>	67	<u>+48</u>	15	<u>100</u>	<u>115</u>	Extend expanding version to three digit numbers. <table style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: right; padding-right: 20px;">264</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>+38</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;">12</td></tr> <tr><td style="text-align: right; padding-right: 20px;">90</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>200</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>302</u></td></tr> </table>	264	<u>+38</u>	12	90	<u>200</u>	<u>302</u>
67												
<u>+48</u>												
15												
<u>100</u>												
<u>115</u>												
264												
<u>+38</u>												
12												
90												
<u>200</u>												
<u>302</u>												

Year 5											
Extend expanding version to three digit numbers. <table style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: right; padding-right: 20px;">264</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>+38</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;">12</td></tr> <tr><td style="text-align: right; padding-right: 20px;">90</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>200</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>302</u></td></tr> </table>	264	<u>+38</u>	12	90	<u>200</u>	<u>302</u>	Develop a standard method showing 'carrying' below the line <table style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: right; padding-right: 20px;">264</td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>+438</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;"><u>702</u></td></tr> <tr><td style="text-align: right; padding-right: 20px;">11</td></tr> </table>	264	<u>+438</u>	<u>702</u>	11
264											
<u>+38</u>											
12											
90											
<u>200</u>											
<u>302</u>											
264											
<u>+438</u>											
<u>702</u>											
11											

Year 6	
Develop a standard method showing 'carrying' below the line	Extend method to larger numbers, decimals, measures etc (including numbers with a different number of digits.
$\begin{array}{r} 264 \\ +438 \\ \hline 702 \\ 11 \end{array}$	$\begin{array}{r} 365.2 \\ + 79.64 \\ \hline 444.84 \\ 11 \end{array}$

SUBTRACTION

Year 3	
Informal jottings recording mental calculations. Counting up from the smaller to the larger number.	Begin to record calculations in expanded form: Decomposition.
	$\begin{array}{r} 92 = 90 + 2 = 80 + 12 \\ - 37 = 30 + 7 = \underline{30 + 7} \\ = \underline{50 + 5} = 55 \end{array}$

Year 4	
Decomposition in expanded form	Leading to
$\begin{array}{l} 632 = 600 + 30 + 2 \\ - 78 = \underline{ + 70 + 8} \\ = 600 + 20 + 12 \\ \underline{ + 70 + 8} \\ 500 + 120 + 12 \\ \underline{ + 70 + 8} \\ 500 + 50 + 4 \\ = 554 \end{array}$	$\begin{array}{r} 632 \\ - 78 \\ \hline 1 \\ = 622 \\ - 78 \\ \hline 11 \\ = 522 \\ - 78 \end{array}$

Children should be told to take from the next column not borrow.

Year 5

Extend expanding version to three digit numbers.

$$\begin{array}{r}
 632 \\
 - 78 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 1 \\
 = 622 \\
 - 78 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 11 \\
 = 522 \\
 - 78 \\
 \hline
 \end{array}$$

Y4

Expanded form of decomposition leading to standard form.

$$\begin{array}{r}
 632 \\
 - 278 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 1 \\
 = 622 \\
 - 278 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 11 \\
 = 522 \\
 - 78 \\
 \hline
 \end{array}$$

354

Year 6

Extend expanding version to three digit numbers.

$$\begin{array}{r}
 632 \\
 - 278 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 1 \\
 = 622 \\
 - 278 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 11 \\
 = 522 \\
 - 78 \\
 \hline
 \end{array}$$

354 Y5

Extend standard method to other numbers, eg. Larger number, decimal etc.

$$\begin{array}{r}
 61313 \\
 7433 \\
 - 2652 \\
 \hline
 \end{array}$$

4781

MULTIPLICATION

Year 3	
Informal method using grid multiplication, 23x8	
$ \begin{array}{r} 20 \quad 3 \\ 8 \quad \boxed{160 \quad 24} = 184 \end{array} $	

Year 4	
Partitioning (short multiplication TU x U)	Leading to
$ \begin{array}{r} 23 \\ \times 8 \\ \hline 20 \times 8 \quad 160 \\ 3 \times 8 \quad \underline{24} \\ 184 \end{array} $	$ \begin{array}{r} 23 \\ \times \underline{8} \\ \hline 160 \\ \underline{24} \\ \hline 184 \\ 2 \end{array} $

Year 5	
H T U x U using informal grid method. Leading to expanded and standard versions of short multiplication eg. 323 x 8	TU x TU using informal grid method; leading to standard version of long multiplication eg. 48x23
$ \begin{array}{r} 300 \quad 20 \quad 3 \\ 8 \quad \boxed{2400 \quad 160 \quad 24} \\ = 2584 \end{array} $	$ \begin{array}{r} X \quad 40 \quad 8 \\ 20 \quad \boxed{800 \quad 160} \\ 3 \quad \boxed{120 \quad 24} \\ = 1104 \end{array} $
$ \begin{array}{r} 323 \\ \times \underline{8} \\ (300 \times 8) \quad 2400 \\ (20 \times 8) \quad \underline{160} \\ (3 \times 8) \quad \underline{24} \\ 2584 \end{array} $	$ \begin{array}{r} 48 \\ \times \underline{23} \\ (48 \times 20) \quad 960 \\ (48 \times 3) \quad \underline{144} \\ 1104 \\ 1 \end{array} $

Year 6	
Extend standard method to other numbers, eg larger number, decimals etc. 3.72 x 4 3.0 x 4 = 12.00 0.70 x 4 = 2.80 0.02 x 4 = <u>0.08</u> <u>14.88</u>	

DIVISION

Year 4	
Informal written methods using multiples of divisors eg 69 ÷ 5 69 - <u>50</u> (10x5) 19 - <u>15</u> (3x5) 4 Answer 13 R4	Expanded version of short division (TU – U) Eg 69 ÷ 5 69 – 5 5) 69 - <u>50</u> (10x5) 19 - <u>15</u> (3x5) 4 Answer 13 R4

Year 5	
Expanded version of short division (HTU – U) eg 275 ÷ 4 4) 275 - <u>240</u> (60x4) 35 - <u>32</u> (8x4) 3 Answer 68 R3	Leading to standard written method for short division eg. 275 ÷ 4 68 R3 4) 275 - <u>240</u> 35 - <u>32</u> 3

Year 6

Standard written method for long division eg. $972 \div 36$

$$\begin{array}{r} 36) 972 \\ - \underline{720} \quad (20 \times 36) \\ 252 \\ \underline{252} \quad (7 \times 36) \\ 0 \end{array}$$

Answer 27

From Reception to Year 2 calculations are largely based around using equipment such as base 10, unifix etc. Towards the end of Year 2 children may begin to use informal jottings such as a blank number line.

Revised by Karen Spencer 2011