

This is the Swalecliffe calculation policy that the teachers use to plan their work in teaching Multiplication. Our aim is to develop deep understanding through these steps so that by the end of Key Stage 2 all children have a compact method that they are able to apply confidently to problem solving.

## Success Ladder for Number-Multiplication

Focus Area: Multiplication calculation.	Examples		
<p><b>By the end of Year 6</b></p>	<p>18) Multiplication of whole number by decimals compact method.  <math>32 \times 3.4</math> Estimate <math>30 \times 3 = 90</math>; calculation <math>32 \times 34</math> is 10 x bigger = 1088; divide by 10 = 108.8, check against estimate.</p> $\begin{array}{r} 32 \\ \times 34 \\ \hline 128 \\ \underline{960} \\ 1088 \end{array}$	<p>19) Multiply decimal by decimal <math>3.5 \times 3.2</math>            Estimate <math>4 \times 3 = 12</math>; calculation done is 100 x bigger, divide 1120 by 100 to adjust = 11.2 check against estimate.</p> $\begin{array}{r} 35 \\ \times 32 \\ \hline 70 \\ \underline{1050} \\ 1120 \end{array}$	
	<p>15) Long multiplication compact method with HTU x TU            Estimate: <math>200 \times 50 = 10000</math></p> $\begin{array}{r} 235 \\ \times 53 \\ \hline 705 \quad (235 \times 3) \\ \underline{11750} \quad (235 \times 50) \\ 12455 \quad (235 \times 53) \end{array}$	<p>16) Multiplication of decimals expanded method. <math>4.62 \times 3 =</math>            Estimate <math>5 \times 3 = 15</math></p> $\begin{array}{r} 4.62 \\ \times 3 \\ \hline 0.06 \quad (0.02 \times 3) \\ \underline{1.8} \quad (0.6 \times 3) \\ 12.0 \quad (4 \times 3) \\ \underline{13.86} \end{array}$	<p>17) Multiplication of decimals by whole number using compact method. <math>8.9 \times 7 =</math>            Estimate <math>9 \times 7 = 63</math>;            (Calculation is 10 x smaller than <math>89 \times 7 = 623</math> divided by 10 = 62.3 (check against estimate.)</p> $\begin{array}{r} 89 \\ \times 7 \\ \hline 623 \end{array}$

<p><b>Year 5</b></p>	<p>11) Long multiplication Grid method. Grid method (TU x TU) e.g. 62 x 36 Estimate: 60 x 40 = 2400</p> <table border="1"> <tr> <td><b>30</b></td> <td>1800</td> <td>60</td> </tr> <tr> <td><b>6</b></td> <td>360</td> <td>12</td> </tr> <tr> <td></td> <td>2160</td> <td>72</td> </tr> </table> <p>2160 + 72 <u>2232</u></p>	<b>30</b>	1800	60	<b>6</b>	360	12		2160	72	<p>12) Long multiplication expanded method. Estimate 30 x 20 = 600</p> $\begin{array}{r} 32 \\ X \underline{16} \\ \underline{12} \quad (2 \times 6) \\ \underline{180} \quad (30 \times 6) \\ \underline{20} \quad (2 \times 10) \\ \underline{300} \quad (30 \times 10) \\ \underline{512} \end{array}$	<p>13) Long multiplication compact method with numbers 13-19 . Estimate 30 x 20 = 600</p> $\begin{array}{r} 32 \\ X \underline{16} \\ \underline{192} \quad (32 \times 6) \\ \underline{320} \quad (32 \times 10) \\ \underline{512} \quad (32 \times 16) \end{array}$	<p>14) Long multiplication compact method with numbers over 20.</p> <p>84x32. Estimate 80 x 30 = 2400</p> $\begin{array}{r} 84 \\ x \underline{32} \\ \underline{168} \quad (84 \times 2) \\ \underline{2520} \quad (84 \times 30) \\ \underline{2688} \quad (84 \times 32) \end{array}$
<b>30</b>	1800	60											
<b>6</b>	360	12											
	2160	72											
<p><b>Year 4</b></p>	<p>8) Short multiplication expanded method. Estimate first. TU x U Estimate: 30 x 4=120</p> $\begin{array}{r} 32 \\ \underline{x4} \\ \underline{8} \quad (2 \times 4) \\ \underline{120} \quad (30 \times 4) \\ \underline{128} \end{array}$	<p>9) Short multiplication expanded method. Estimate first. HTU x U Estimate: 200 x 10=2000</p> $\begin{array}{r} 196 \\ \underline{x9} \\ \underline{54} \quad (6 \times 9) \\ \underline{810} \quad (90 \times 9) \\ \underline{900} \quad (100 \times 9) \\ \underline{1764} \end{array}$	<p>10) Short multiplication. Compact method. Estimate: 140 x 10= 1400</p> $\begin{array}{r} 142 \\ \underline{x8} \\ \underline{1136} \end{array}$ <p>Estimate: 3000 x 6 = 18000</p> $\begin{array}{r} \underline{3241} \\ \underline{x6} \\ \underline{19446} \end{array}$										

