

Progression in written calculation

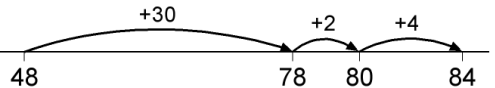

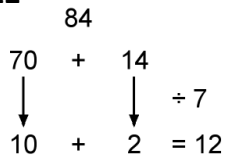
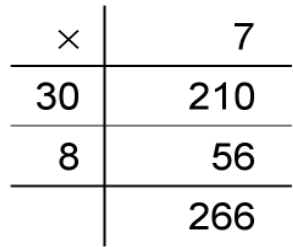
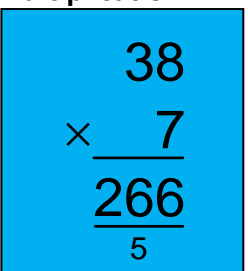
Pupils are expected to be proficient in the formal calculation methods by the end of specific year groups, the phases of learning will be delivered across KS1 and KS2.

Children must be proficient in this method by the end of Y3

Children must be proficient in this method by the end of Y4

Children must be proficient in this method by the end of Y5

Children must be proficient in this method by the end of Y6

Addition	Subtraction	Multiplication	Division
<p>Phase 1 The empty number line</p> $48 + 36 = 84$ 	<p>Phase 1 The empty number line</p> $15 - 7 = 8$ 	<p>Phase 1</p> $\begin{array}{r} 43 \\ 40 + 3 \\ \downarrow \quad \downarrow \\ 240 + 18 = 258 \end{array} \times 6$	<p>Phase 1 Partitioning</p> $84 \div 7 = 12$ 
<p>Phase 2 Partitioning</p> $\begin{array}{r} 47 = 40 + 7 \\ + 76 \quad 70 + 6 \\ \hline 110 + 13 = 123 \end{array}$	<p>Phase 2 Partitioning</p> $67 - 23 = 44$ $\begin{array}{r} 60 + 7 \\ - 20 + 3 \\ \hline 40 + 4 = 44 \end{array}$	<p>Phase 2 Grid method</p> 	<p>Phase 2 Expanded method</p> $\begin{array}{r} 6 \overline{)196} \\ - 60 \quad 6 \times 10 \\ \hline 136 \\ - 60 \quad 6 \times 10 \\ \hline 76 \\ - 60 \quad 6 \times 10 \\ \hline 16 \\ - 12 \quad 6 \times 2 \\ \hline 4 \quad 32 \\ \text{Answer: } 32 \text{ R } 4 \end{array}$
<p>Phase 3 Expanded written method</p> $\begin{array}{r} 47 \\ + 76 \\ 13 \\ \hline 110 \\ 123 \end{array}$	<p>Phase 3 Expanded method</p> $\begin{array}{r} 70 + 4 \\ - 20 + 7 \\ \hline 40 + 7 \end{array} \quad \begin{array}{r} 60 \quad 14 \\ \overline{70 + 4} \\ - 20 + 7 \\ \hline 40 + 7 \end{array}$	<p>Phase 3 Expanded method</p> $\begin{array}{r} 38 \\ \times 7 \\ \hline 210 \\ 56 \\ \hline 266 \end{array}$	<p>Phase 3 More efficient expansion</p> $\begin{array}{r} 6 \overline{)196} \\ - 180 \quad 6 \times 30 \\ \hline 16 \\ - 12 \quad 6 \times 2 \\ \hline 4 \quad 32 \\ \text{Answer: } 32 \text{ R } 4 \end{array}$
<p>Phase 4 Formal written method</p> $\begin{array}{r} 47 \\ + 76 \\ \hline 123 \\ 11 \end{array}$	<p>Phase 4 Formal written method</p> $\begin{array}{r} 4 \quad 15 \quad 13 \\ \overline{563} \\ - 278 \\ \hline 285 \end{array}$	<p>Phase 4 Formal short and long multiplication</p> 	<p>Phase 4 Formal short and long division</p> 