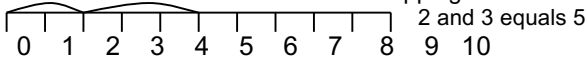

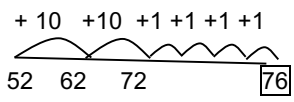
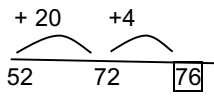



## Progression in Addition – Calculation Policy

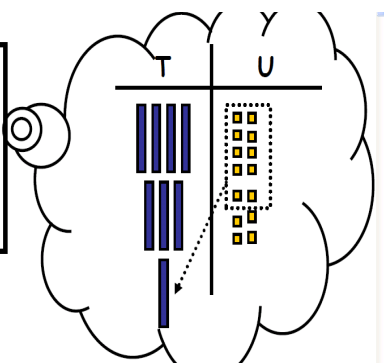
Year	What will addition look like?	Notes
EYFS	Practical, counting objects and relating addition to combining two groups of objects	
Y1	<p>Use of the number track and number line - hopping and recording.</p>   $2 + 3 = \square$ $\square + \triangle = 4$ $5 + 3 + 1 = 9$ Continue to develop pupils' understanding of addition with practical activities using concrete apparatus, such as bundles of straws, numicon, counters and diennes.	<p>Children memorise and reason with number bonds to 10 and 20 in several forms (e.g. <math>9 + 7 = 16</math>; <math>16 - 7 = 9</math>; <math>7 = 16 - 9</math>).</p> <p>They should realise the effect of adding or subtracting zero.</p> <p>Problems should include the terms put together, add, altogether, total, take away, distance between, more than and less than, so that pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.</p>
Y2	<p>a) <math>52 + 24 =</math></p>   Children continue to use empty number lines to calculate with bigger numbers, <u>partitioning the smaller number</u> and adding to the most significant digit first. First counting on in tens, then ones. Then helping children become more efficient by adding the ones in one single jump (by using the known fact $4 + 2 = 6$ ). <p>(b) <math>37 + 15 = 52</math> (<math>47 + 3</math> (<math>50</math>) <math>+ 2</math>)</p> <p>(c) <math>\square + \triangle = 9</math></p> <p>(d) <math>61 + 17 + 24 = \square</math></p> <p>When children have a good understanding of place value and partitioning, introduce the columnar methods with additions that <u>do not cross the tens boundary</u> using concrete apparatus laid out in a columnar form.</p> 	<p>Children extend their understanding of the language of addition and subtraction to include sum and difference.</p> <p>Children practise addition and subtraction to 20 to become increasingly fluent in deriving facts such as using <math>3 + 7 = 10</math>, <math>10 - 7 = 3</math> and <math>7 = 10 - 3</math> to calculate <math>30 + 70 = 100</math>, <math>100 - 70 = 30</math> and <math>70 = 100 - 30</math>.</p> <p>They check their calculations, including by adding to check subtraction and adding numbers in a different order to check addition (e.g. <math>5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5</math>). This establishes commutativity and associativity of addition.</p> <p>Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers.</p>

Y3

Children need to build on their understanding of place value, partitioning and their concrete experiences to develop columnar methods of addition which bridge the tens, then hundreds, initially in the expanded form.

Expanded method  
It is important that the children have a good understanding of place value and partitioning using concrete resources and visual images to support calculations. The expanded method enables children to see what happens to numbers in the standard written method.

$$48 + 36$$



Children use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits.

**Build on Partitioning: to develop an expanded column addition with 3-digit numbers.**

$$\begin{array}{r} 183 \\ 342 \\ +110 \\ \hline \end{array} = 100 + 80 + 3 = 300 + 40 + 2 = 100 + 10 + 0$$

$$500 + 130 + 5 = 635$$

**Progress to using the Expanded method, adding the least significant digit first.**

$$\begin{array}{r} 124 \\ +197 \\ \hline 11 \quad (4 + 7) \\ 110 \quad (20 + 90) \\ \hline 200 \quad (100 + 100) \\ \hline 321 \end{array}$$

Begin to add like fractions e.g.  $\frac{3}{8} + \frac{1}{8} + \frac{1}{8}$ .

Recognise fractions that add to 1 e.g.  $\frac{1}{4} + \frac{3}{4}$  or  $\frac{3}{5} + \frac{2}{5}$ .

Y4

Children to use their understanding of the expanded columnar methods of addition to progress to use the compact method.

**Build on Partitioning: to develop an Expanded column addition with larger numbers.**

$$\begin{array}{r} 1466 \\ + 4868 \\ \hline \end{array} = 1000 + 400 + 60 + 6 = 4000 + 800 + 60 + 8$$

$$\underline{1000 + 100 + 10}$$

$$6000 + 300 + 30 + 4 = 6334$$

**Progress to using the Compact method, adding the least significant digit first.**

5347	5347
2286	2286
+1495	+1495
<u>121</u>	<u>9128</u>
9128	<u>121</u>

Use expanded column and compact methods to add amounts of money.

Add like fractions e.g.  $\frac{3}{5} + \frac{4}{5} = \frac{7}{5} = 1 \frac{2}{5}$ .

Be confident with fractions that add to 1 and fraction complements to 1. e.g.  $\frac{2}{3} + \underline{\quad} = 1$ .

Children to practise columnar addition and subtraction with increasingly large numbers to aid fluency.

<p><b>Y5</b></p>	<p>Children to use <b>Expanded column addition</b> for money leading to compact column addition for adding several money amounts e.g.</p> <p>£14.64 + £28.78 +£12.26</p> $  \begin{array}{r}  \text{£}14 \text{ 60p 4p} \\  \text{£}28 \text{ 70p 8p} \\  + \text{£}12 \text{ 20p 6p} \\  \hline  \text{£}1 \text{ 10p} \\  \hline  \text{£}55 \text{ 60p 8p}  \end{array}  $ <p>Children to use <b>Compact addition</b> to add decimal numbers with up to 2 decimal places and with larger whole numbers.</p> <p>e.g. £15.68 + £27.86</p> $  \begin{array}{r}  \text{£} \text{ 15.68} \\  + \text{£} \text{ 27.86} \\  \hline  \text{£} \text{ 43.54}  \end{array}  $ <p>Begin to add related fractions using equivalences e.g. <math>\frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6}</math>.</p>	
<p><b>Y6</b></p>	<p>Children to use compact addition for adding large whole numbers and decimal numbers or when adding money. * Children may fill empty columns with zeros initially, to preserve place value.</p> $  \begin{array}{r}  267648 \\  +121486 \\  \hline  \text{111} \\  \hline  389134  \end{array}  $ <p>124.9 + 7.25</p> $  \begin{array}{r}  124.90^* \\  + \text{7.25} \\  \hline  \text{11} \\  \hline  132.15  \end{array}  $ <p>Add mixed numbers and fractions with different denominators. e.g. <math>\frac{1}{4} + \frac{2}{3} = \frac{11}{12}</math> or <math>2 \frac{1}{4} + 1 \frac{1}{3} = 3 \frac{7}{12}</math>.</p>	