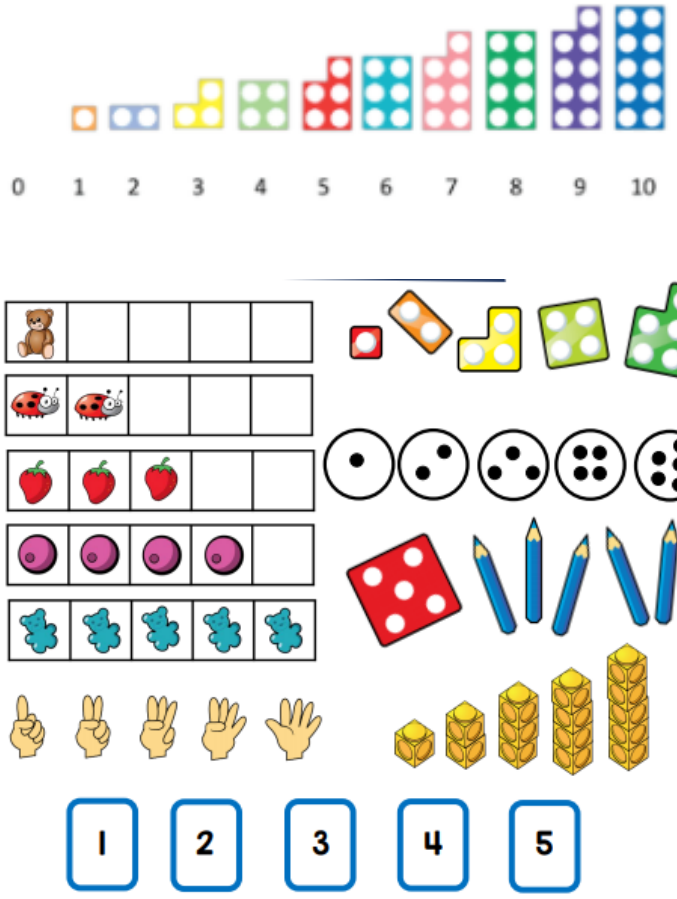
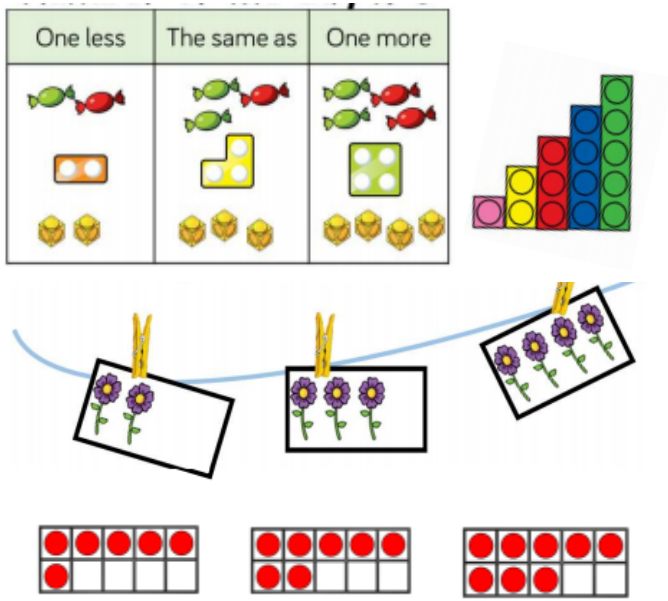
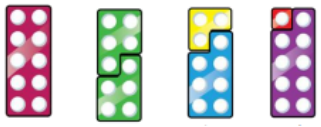
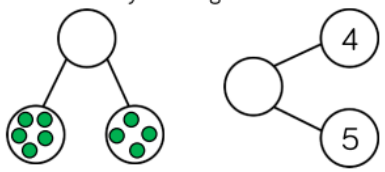
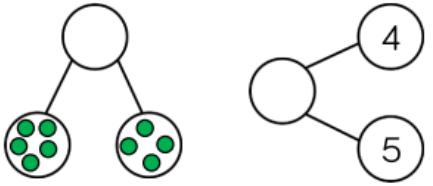
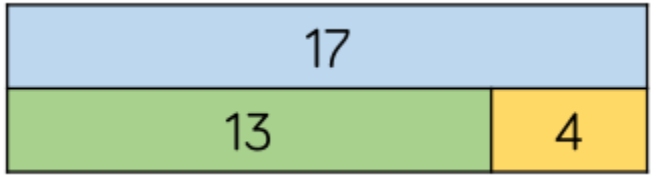
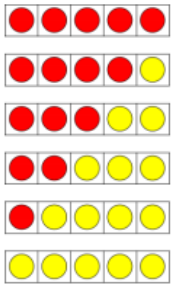
Headlands Primary School

Addition Policy and Methods

	Mental Calculations	Calculation	Methods
EYFS		Using quantities and objects, add two single-digit numbers and count on to find the answer. Find the total number of items in two groups by counting all of them. Say the number that is one more than a given number. Find one more from a group of up to five objects, then ten objects. In practical activities and discussion, begin to use the vocabulary involved in adding.	Children use objects and pictures to support **addition.** 

			Children should be able to practically combine two sets of objects in one group. 2 + 3 =   Children should be able to find one more than a given number.  They begin to learn to use the operation signs and to write numbers.  5 + 5 =10

			Complete the part-whole models by drawing counters and then writing the numerals. 
Year 1	Add and subtract one-digit and two-digit numbers to 20, including zero Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	It is important that children have a clear understanding of the concept of *equality*, before using the '=' sign. Calculations should be on either side of the '=' so that children don't misunderstand '=' as to mean 'the answer'.  Complete the part-whole models by drawing counters and the writing the numerals. 
Year 2	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	Solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods	



$5 = 5 + 0$

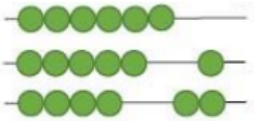
$5 = 4 + 1$

$\_ = \_ + \_$

$\_ = \_ + \_$

$\_ = \_ + \_$

$\_ = \_ + \_$

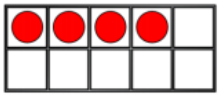


$6 = 6 + 0$

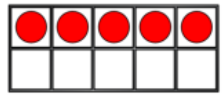
$6 = 5 + 1$

$6 = 4 + 2$

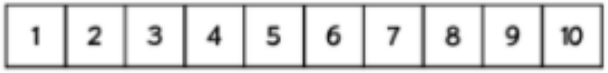
Use the ten frames to complete the number bonds to 10

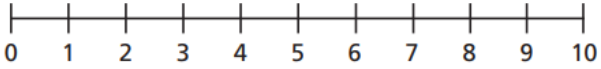


$4 + \_\_ = 10$

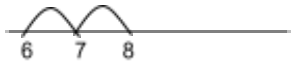


$5 + \_\_ = 10$





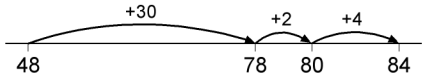
6 + 2 = 8



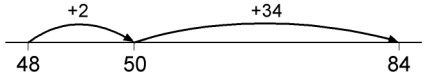
Steps in **addition** can be recorded on a number line. The steps often bridge through a multiple of 10.

8 + 7 = 15

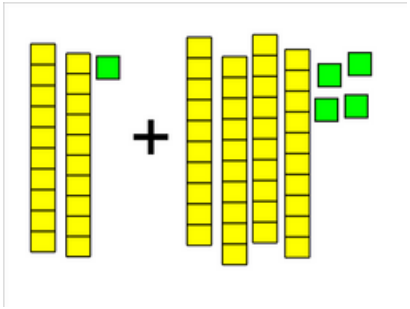
48 + 36 = 84

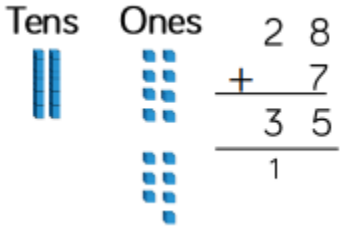


or:



Partitioning

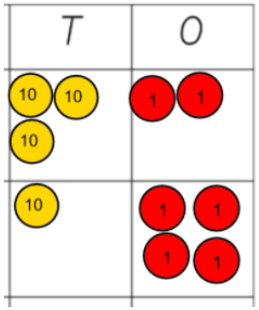
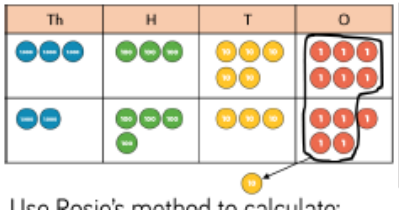




Use the place value charts and concrete materials to complete the calculations.

Tens	Ones

2 3
+ 4 0
_____

			 34 + 42 76
Year 3	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	**Column Method** **Partitioned column method:** 442 + 26 = 400 + 40 + 2 + 20 + 6 = 400 + 60 + 8 = 468 Write the numbers in columns. 47 + 76 13 110 123 Use Dienes or **place value** counters to support understanding, moving into compact column method:  Use Rosie's method to calculate: Th H T O 3 3 5 6 + 2 4 3 5 5 7 9 1 1 Extend the use of the ***compact column method to decimals***.

Year 4		Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	▰ Children should add the column furthest to the right first. ▰ Numbers should be 'carried' underneath the line. ▰ To ensure conceptual understanding, it is essential that place value is reinforced by frequently discussing the actual value of each digit, e.g. the 2 digit represents 2 tens.

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Year 5</td><td>Add and subtract numbers mentally with increasingly large numbers</td><td>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</td><td>Once competent in the partitioned column method, children can move on to <u>compact column method</u>.

<table>
<tr><td>47</td><td>258</td><td>366</td></tr>
<tr><td>+ 76</td><td>+ 87</td><td>+458</td></tr>
<tr><td>123</td><td>345</td><td>824</td></tr>
<tr><td>11</td><td>11</td><td>11</td></tr>
</table>

Column addition remains efficient when used with larger whole numbers and decimals. Once learned, the method is quick and reliable.

▪ Where there is an ‘empty’ space in a decimal column, children should insert a zero to show the value.
▪ To ensure conceptual understanding, it is essential that place value is reinforced by frequently discussing the actual value of each digit, e.g. the 5 digit represents 5 hundredths.

Use place value counters to support understanding of carrying and to ensure conceptual understanding of place value, and
<table>
<tr><td>1</td><td>9</td><td>.</td><td>0</td><td>1</td></tr>
<tr><td></td><td>3</td><td>.</td><td>6</td><td>5</td></tr>
<tr><td>+</td><td>0</td><td>.</td><td>7</td><td>0</td></tr>
<tr><td>2</td><td>3</td><td>.</td><td>3</td><td>6</td></tr>
<tr><td>1</td><td>1</td><td></td><td></td><td></td></tr>
</table>
add counters with 0.1, 0.01.

Extend the use of compact column method to adding several numbers with mixed decimals.
Use place value counters to support understanding of carrying and to ensure conceptual understanding of place value, add counters with 0.1, 0.01, and 0.001.
<table>
<tr><td>2</td><td>3</td><td>.</td><td>3</td><td>6</td><td>1</td></tr>
<tr><td></td><td>9</td><td>.</td><td>0</td><td>8</td><td>0</td></tr>
<tr><td>5</td><td>9</td><td>.</td><td>7</td><td>7</td><td>0</td></tr>
<tr><td>+</td><td>1</td><td>.</td><td>3</td><td>0</td><td>0</td></tr>
<tr><td>9</td><td>3</td><td>.</td><td>5</td><td>1</td><td>1</td></tr>
<tr><td>2</td><td>1</td><td></td><td>2</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Year 6</td><td>Perform mental calculations, including with mixed operations and large numbers</td><td>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</td><td></td></tr>
</table>

Addition and subtraction

789 + 642 becomes

$$\begin{array}{r} 7\ 8\ 9 \\ +\ 6\ 4\ 2 \\ \hline 1\ 4\ 3\ 1 \\ \hline \ 1\ \ 1 \end{array}$$

Answer: 1431

874 – 523 becomes

$$\begin{array}{r} 8\ 7\ 4 \\ -\ 5\ 2\ 3 \\ \hline 3\ 5\ 1 \end{array}$$

Answer: 351

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle 8\ \ 12\ \ 1} \\ 9\ \not{3}\ \not{2} \\ -\ 4\ 5\ 7 \\ \hline 4\ 7\ 5 \end{array}$$

Answer: 475