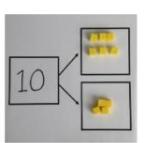
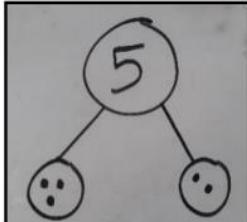
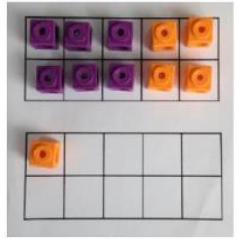


<p>Stage One: Practical Addition Key Vocabulary: add, plus, altogether, total, number bond, part, whole digit, 1-digit number, count, subitise, order, ordinal, compare forwards, backwards, numerals, digit, one more, one less, equal to, more than, less than, tens frame</p>	<p>Reception</p>
<p>Children add together single digits using objects. They start by adding all the objects. Next (once able to subitise) they should be taught to start with the largest number and count on. Children do not need to see the abstract at this stage ($3+3=6$) however a move towards this once children are secure will help them when moving to the next stage. They should be exposed to and write the digits alongside practical equipment. They should use toys and fun objects in provision and also begin to use some mathematical equipment such as counters, numicon, cubes, tens frames and part whole models.</p> <p>Examples:</p>  <div data-bbox="134 849 460 992">  <p>Use cubes to add two numbers together as a group or in a bar.</p> </div>     	<p>Children need to be able to:</p> <ul style="list-style-type: none"> • Have one to one correspondence • Reliably count objects up to 20. • Recognise numerals up to 20. • Say one more than any number up to 20. • Subitise up to 5 objects. (Instantly recognise how many there are without having to count).



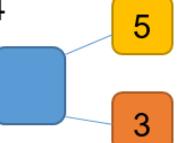




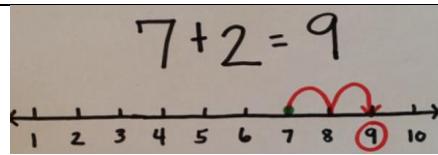


Start with the bigger number and use the smaller number to make 10.

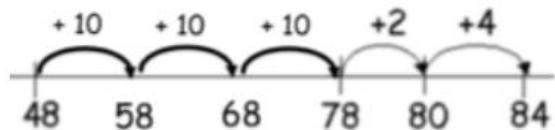
$4 + 3 = 7$

$10 = 6 + 4$


<p>Stage Two: Introduce concept of partitioning into tens and ones before moving to column addition Key Vocabulary: addition, add, subtract, subtraction, difference, equals, equal to, facts, problems, missing number, 2 digit number, number line</p> <p>Children should be introduced to numbered number lines. They will then move to empty number lines help to support the calculation process by recording the steps to get to the total. When the number bridges 10 then children should be encouraged to think about 'how many more to 10?' This will require secure knowledge of bonds to 10. Children do not always have to start with the largest number however they should be guided to understand that this is the most efficient method.</p> <p>They should count in ones first.</p>	<p>Key Stage One</p> <p>In Y1 children need to be able to:</p> <p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</p> <p>Represent and use number bonds and related subtraction facts within 20.</p> <p>Add and subtract one-digit and two-digit numbers to 20, including zero.</p> <p>Solve one-step problems that involve addition and subtraction, using concrete objects and</p>
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Then they should progress to counting the tens first followed by the ones.

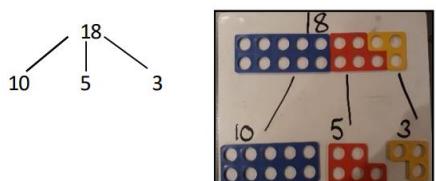
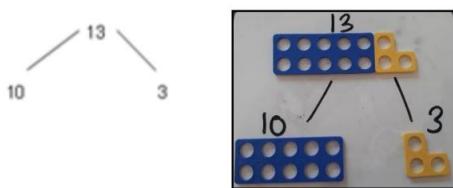


When secure with adding individual tens they can move on to adding groups of tens.



Progression should see children being able to solve number problems such as $13+9$ and $15+11$ using related facts ($9=10-1$ and $11=10+2$)

As well as number lines children will use different models and manipulatives to partition numbers into tens and ones in order to add them back together.



Part whole models to split tens and ones will help children to move towards the formal written method.

pictorial representations, and missing number problems.

In Y2 children need to be able to:

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

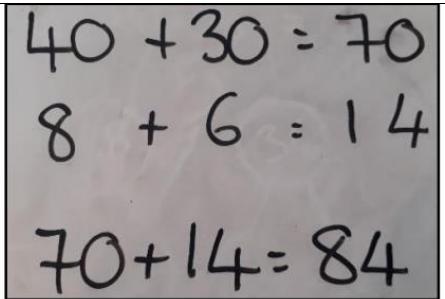
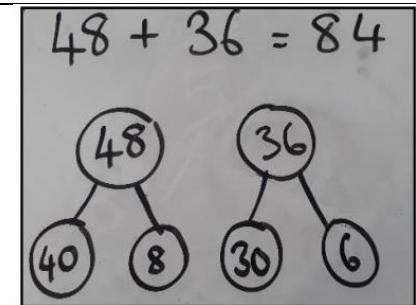
Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

A two-digit number and 1s
A two-digit number and 10s
2 two-digit numbers
Adding 3 one-digit numbers

Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

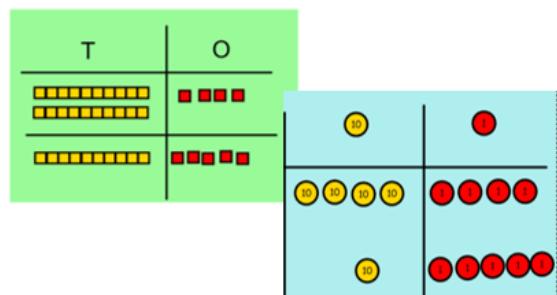


They will also use base 10 and counters in a place value chart to partition and add numbers back together.

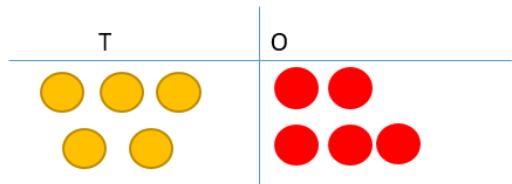
$$24 + 15 =$$

Add together the ones first then add the tens.

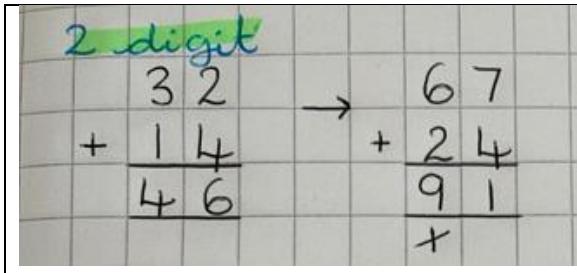
Use the Base 10 blocks first before moving onto place value counters.



After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.



By Year 2 children will learn to use the column method to add two 2 digit numbers, beginning with no re-grouping. They are taught to set out the calculation carefully, one number per box and ensuring the tens and the ones are in the correct position. By the end of Year 2 most children will be able to complete the column method with re-grouping.



Stage Three: Formal standard method of addition - column method

Key Vocabulary: column addition, exchange, estimate, 4-digit number, operation, method, decimal, place holder, tenths, hundredths, thousandths, decimal notation, pounds, pence

Key Stage 2

Column method

This is introduced in Y2 and is built on and progresses throughout KS2.

Progression in addition:

Y2 - 2 digit numbers (KS1)

Y3 - 3 digit numbers and decimals up to 2 decimal places (in the context of money)

Y4 - 4 digit numbers

Y5/6 - More than 4 digits

We teach children to 'exchange' ones for tens etc. and when adding back up we teach them to say e.g 7 ones add 4 ones and 6 tens add 2 tens rather than $7 + 4$ and $6 + 2$. This is to continually remind them of the place value concept.

Children should also be taught to cross out the number they have moved to check at the end it has been counted - if it is not crossed out they may have forgotten to add it with the other numbers.

In Y3 children need to be able to:

Add numbers with up to three digits, using formal written methods of columnar addition

Estimate the answer to a calculation and use inverse operations to check answers

Solve problems, including missing number facts, place value, and more complex addition and subtraction.

In Y4 children need to be able to:

Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition

2 digit

32	→	67
+ 14	+	24
<u>46</u>	<u>91</u>	<u>+</u>

Estimate and use inverse operations to check answers to a calculation

Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

3 digit

424	→	763
+ 151	+	249
<u>575</u>	<u>1012</u>	<u>++</u>

Adding money

£ 3.23
£ 1.95
<u>£ 5.18</u>
<u>++</u>

In Y5/6 children need to be able to:
Add and subtract whole numbers with more than 4 digits, including using formal written methods for columnar addition.

4 digit

7251	→	9924
+ 1369	+	6176
<u>8620</u>	<u>16100</u>	<u>+++</u>
<u>++</u>		

more than 4 digits

64233	→	9924
+ 48647	+	6176
<u>112880</u>	<u>16100</u>	<u>+++</u>
<u>++</u>		

Decimal progression

$$\begin{array}{r} \text{£} 23.59 \\ + \text{£} 7.55 \\ \hline \text{£} 31.14 \\ \times \times \times \\ \hline \text{£} 212 \end{array} \quad \begin{array}{r} 23.361 \\ + 9.080 \\ \hline 59.770 \\ 1.300 \\ \hline 93.511 \end{array}$$