ADDITION

Year 1

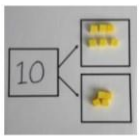
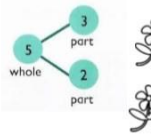
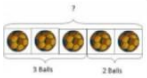
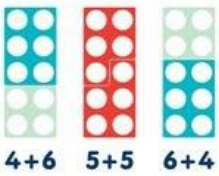
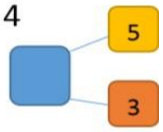
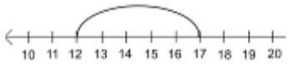
Add with numbers up to 20, including 0.

Start with combining two sets of objects to make one whole (Part-whole model).
Use practical methods, including number tracks to add by counting on in ones.
Encourage starting with the larger number then counting on (rather than starting from 0).

Recall & use number bonds to and within 20.

Key Vocab:

add, more, plus, and, make, altogether, put together, total, equal to, equals, double, most, count on, number line, more than, most.

	Concrete	Pictorial	Abstract
Part-whole model	 Use cubes to add two numbers together as a group or in a bar.	  Use pictures to add two numbers together as a group or in a bar. 	$4 + 3 = 7$ $10 = 6 + 4$  Use the part-part whole diagram as shown above to move into the abstract.
Counting on in ones	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	Start at the larger number on the number line and count on in ones or in one jump to find the answer. $12 + 5 = 17$ 	Place the larger number in your head and count on the smaller number to find your answer. $5 + 12 = 17$

Children should

- Have access to a range of equipment such as Numicon, number lines, bead strings, 100 squares.
- Have opportunities to add using concrete objects in a range of real life contexts e.g. adding the number of teddies, number of children etc.
- Be exposed to a variety of models and images to support their learning.
- Read and write number sentences using the + and = signs.
- Solve missing number problems.

ADDITION

Year 2

Add three one digit numbers.

Add multiples of ten.

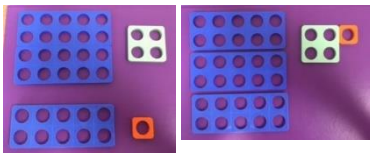
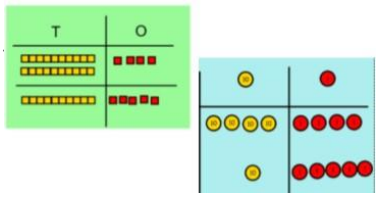
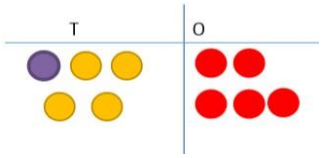
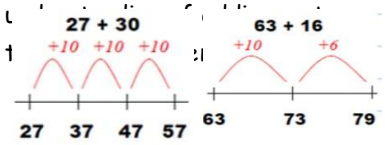
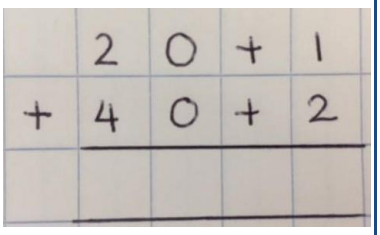
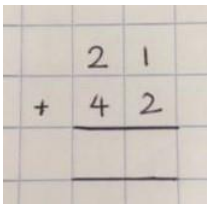
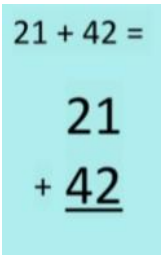
Add with 2 digit numbers.

Develop mental fluency (including crossing the tens boundary) with place value and addition using 2 digit numbers, then move to more formal methods.

Key Vocab:

add, more, plus, and, make, altogether, put together, total, equal to, equals, double, most, count on, number line.

Sum, tens, ones, partition, addition, column, tens boundary.

	Concrete	Pictorial	Abstract
Column method (no regrouping)	**24 + 11 =** Using Numicon to make both numbers using ten plates, a four plate and a one plate. Recombine to count.  **34 + 13 =** Using base ten to make both numbers using tens and ones. Recombine to count. 	Using pictorial representations of base 10 and place value counters. Children could use place value counters to help them to solve additions. Start by add-   Using a number line to support 	 Lead to expanded column method, then compact column method. Written method modelled on squared and non-squared backgrounds.  

Children should

- Have experience of adding three 1 digit numbers, two digit numbers and tens, two digit numbers and ones and two 2 digit numbers using concrete apparatus.
- Use numberlines to support counting on in tens and ones. (prepared, then empty).
- Move to more formal recording - expanded column method, then compact column method. These two methods could be taught in parallel.
- Have experience of applying these methods to a range of different contexts including worded addition problems.
- Missing number problems.
- Know that numbers can be added in any order (commutative law).

ADDITION

Year 3

Add up to 3 digits.

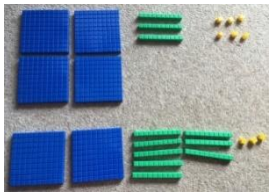
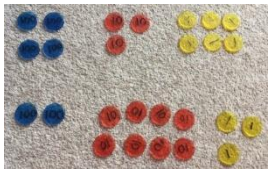
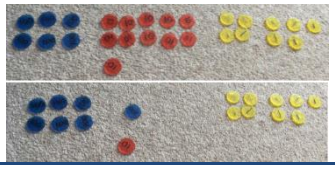
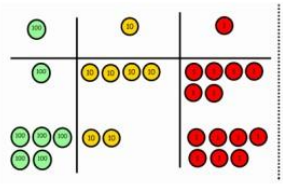
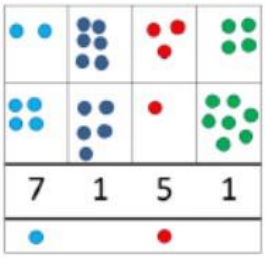
Expanded column method adding ones first.

Compact column addition method including exchanging.

These should be taught in parallel with an emphasis on applying to reasoning problems.

Key Vocab:

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary.
Hundreds boundary, increase, vertical, exchange, regroup expanded, compact.

	Concrete	Pictorial	Abstract
Column method	Use of dienes or place value counters to model addition by making both numbers and using a place value grid to align the numbers according to their place value.   Demonstrate the need to swap ten ones for one ten when exchanging. 	Pictorial representation of the concrete apparatus.  146 + 527 Children can draw the counters, using place value columns. Also extend to 4 digit numbers.  7 1 5 1	Start by modelling the expanded method. The compact method can be modelled alongside. 128 + 315 = 100 + 20 + 8 + 300 + 10 + 5 400 + 30 + 13 1 2 8 + 3 1 5 4 4 3 1 Children to apply the methods in context.

Children should

- Have experience of adding 3 digit numbers and ones, 3 digit numbers and 2 digit numbers, two 3 digit numbers using concrete apparatus.
- Use formal recording - expanded column method, then compact column method. These two methods should be taught in parallel.
- Have experience of applying these methods to a range of different contexts including worded addition problems & missing number problems.
- Move on to adding with 4 digit numbers & applying this to a range of reasoning problems.
- Estimate reasonable answers to calculations by rounding & know the importance of estimation.
- Understand the commutative law and how it applies to addition

ADDITION

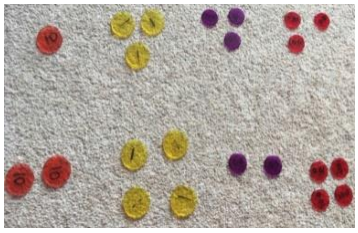
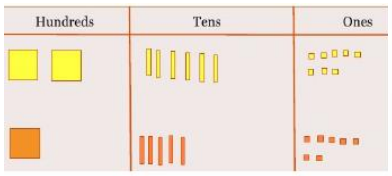
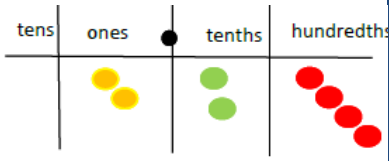
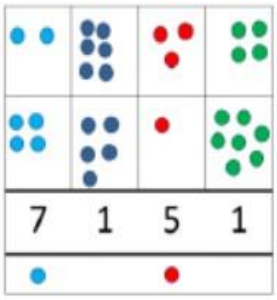
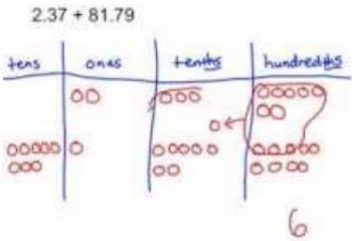
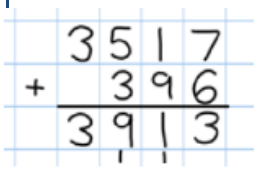
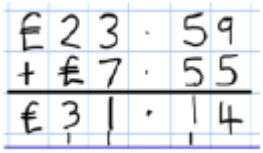
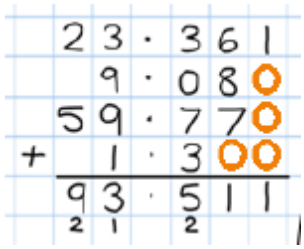
Year 4-6

Yr 4- Add up to 4 digits using the formal written methods of columnar addition where appropriate.
Yr 5- Add numbers with more than 4 digits using the formal written methods of columnar addition where appropriate (2 decimal places)
Yr 6- Add several numbers of increasing complexity (up to 3 decimal places)

Key Vocab:

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, exchange, regroup, expanded, compact. Millions, hundreds of thousands, tens pf thousands, thousands, hundreds, digits, inverse, tenths, hundredths, decimal point, decimal places.

Compact column addition method including exchanging. Application of columnar addition for decimal numbers in context - money & measures.

	Concrete	Pictorial	Abstract
Column method.	As before, modelling method for at least 4 digit numbers using place value counters or dienes.    Introduce decimal place value counters and model exchange for addition.	Pictorial representation of the concrete apparatus.   Children can draw the counters, using place value columns. Using place value charts and place value counters is key when understanding adding decimals.	Model questions including 0s and the importance of these as placeholders 2dp in context of money   

Children should

- Have experience of adding at least 4 digit numbers to numbers of different sizes, using concrete apparatus.
- Apply mental calculations using increasingly large numbers (Yr6 including mixed operations)
- Have experience of applying these methods to a range of different contexts including worded addition problems including 2-step problems, and multi-step (Yr5/6) problems, deciding which operations and methods to use and why.