Godmanchester Community Academy

Calculation Policy: Key Stage One and Key Stage Two
Addition

Objectives relating to addition by year group

Pre-requisites:

Counting: count accurately from 0 to 21; count up to 20 objects accurately and attribute the correct numeral to label the set;
Ordering: order numbers to 20 accurately; understand how a number line is organised
Representations: subitise small groups of objects (i.e. can say how many there are without needing to count each individual object; understand the 'cardinal' value of a set/ array. (Once it has been counted they understand that they don't need to count again.)

- Year 1 – Add one-digit and two-digit numbers to 20, including zero
- Year 2 – Add a two-digit number and 1s, a two-digit number and 10s, 2 two-digit numbers. Add 3 one-digit numbers
- Year 3 - Add numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- Year 4 - Add numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Year 5 - Solve problems involving number up to 3 decimal places. They practise adding decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example, 0.83 + 0.17 = 1).
- Year 6 - Solve addition multi-step problems in contexts, deciding which operations and methods to use and why

Vocabulary:

add addition plus sum total

increase more than altogether and

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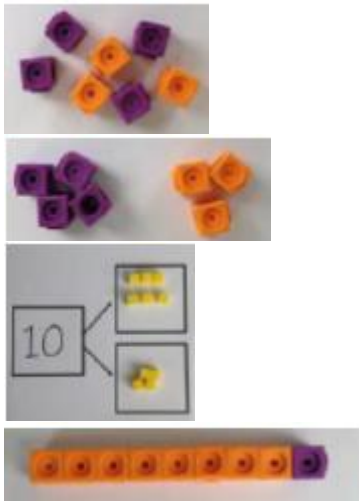
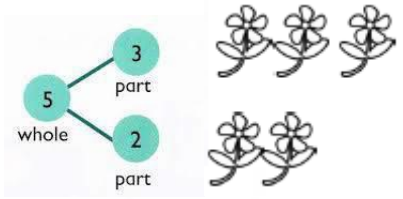
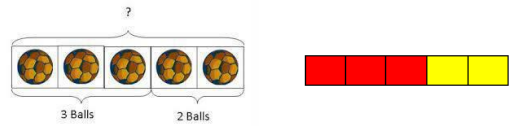
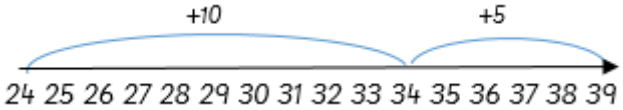
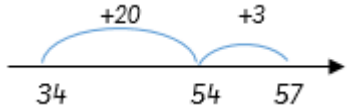
Concrete	Pictorial	Abstract
Use cubes to add two numbers together as a group or in a bar.  Bridging through ten (I digit + 1 digit) 6 + 5	Use pictures to add two numbers together as a group or in a bar.   5 3 2 N.B It is important that chdn show a sense of proportion when using the part part whole (PPW) model Bridging through ten  6 + 5 =11 (4) (1) Using a tens frame	Addition on a numbered number line • Adding 1 digit numbers in jumps of one +1 +1 +1 +1 • Adding teen numbers in tens and ones +10 + 1 + 1 +1 • Adding teen number in a ten jump and a single jump of ones +10 +5  • Adding a 2 digit number in jumps of ten and a single jump of ones +10 + 10 + 5 • Adding any 2 digit number in a single jump of tens and single jump of ones +20 + 5 Addition on an blank number line • Progression as above e.g.  N.B Bridging through ten can lead to increased efficiency both on a numbered number line and blank number line. 37 + 15 =

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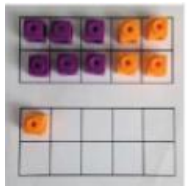
Use of tens frame to support bridging through ten

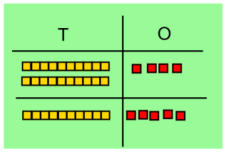


Not bridging ten

24 + 15

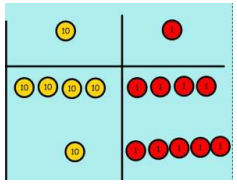
Make both numbers with Base 10

Add together the ones first, then add the tens

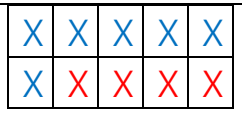


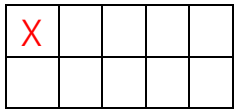
Moving onto use of place value counters

43 + 15



Beginning to regroup





Not bridging ten

24 + 15

10s	1s
●●	●●●
●	●●●●●

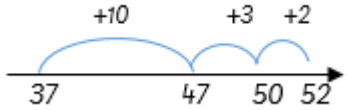
10s	1s
II	IIII
I	IIIII

Beginning to regroup

49 + 23

10s	1s
●●●●	●●●●● ●●●
●●	●●●

Model exchanging 10 ones for 1 ten



Introduction of column method (Beginning with addition of least significant digit)

				T					O	
	4	9		4	0		+		9	
+	2	3		2	0		+		3	
				6	0		+	1	2	

Space left between partitioned numbers to allow for a 2 digit sum of the ones.

Moving to recording using column method without partitioning

	4	9						
	2	3						
	1	2		9	+	3		
	6	0		4	0	+	2	0
	7	2						

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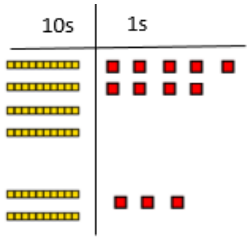
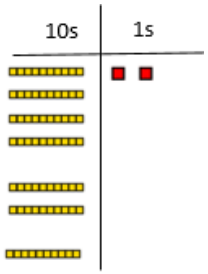
49 + 23

Make both numbers on a place value grid.

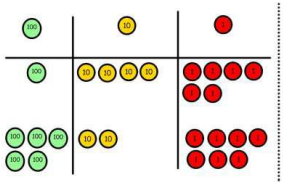


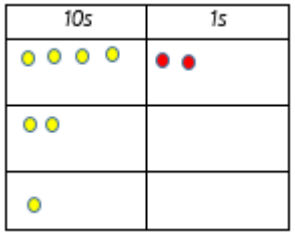
Add up the units and exchange 10 ones for 1 ten.



Moving onto place value counters

146 + 527





Children may then be ready to represent the counters with lines or other means

146 + 527

H	T	O
□	IIII	●●●●
□□□	II	●●●●●
	I	
6	6	3

N.B children need to understand that they are not adding 2 and 1 but 20 and 10

	2	4	
+	1	5	
	3	9	

Compact Method

N.B Regrouped digit to be marked below the line

	1	4	6	
+	5	2	7	
	6	7	3	
		1		

	7	2	.	8
+	5	4	.	6
1	2	7	.	4
		1		

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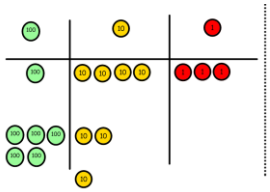
Add up the ones and exchange 10 ones for 1 ten and so on



Continue using place value counters as children begin to work with decimals.

	1	
6	7	3

	2	3	.	3	6	1
		9	.	0	8	0
	5	9	.	7	7	0
+		1	.	3	0	0
	9	3	.	5	1	1
	2	1	.	2		