Calculation Progression for Addition

	Principle	Example
Yr R	Counting – stable order principle	Understand the counting sequence stays consistent, 1 2 3 4 5 identify as unsecure when counting is out of sequence, counting in incorrect order.
	One to one correspondence	Each object must be given one count, teach tagging, move once counted, into a line from left to right.
	Conservation principle	The count of a set remains the same whether they are close together or spread out. Identify if children need to re-count if objects are moved.
	Abstract principle	You can count according to a range of criteria eg count a group of toys which might contain different size, colour, shape, type of toy
	Can count one more, one less than 5 then 10	Using real objects/situations, how many if one more came to tea? What if one animal got away? etc.
	Begin to relate addition as combining two sets of objects	How many altogether? Children record by drawing or tallying
R/1	Select two groups to make a given total	I need 10 pieces of fruit, what might I have? (6 bananas, 4 oranges etc.)
	Addition can be done in any order	Explore to discover this in a range of contexts
	Find a total by counting on when one group is hidden	Child no longer needs to count first set before counting on, child to discover the learning through experience
	More than two sets can be added together	Experience through a range of contexts
Yr 1	Begin to move from informal recording to mathematical statements involving + = signs	Introduce +, = signs and their meanings. Discuss = as balancing, one side is the same value as the other. Use scales to demonstrate when appropriate
	Use the signs and their meanings when solving real life problems	Apply to as many different contexts as possible, linking to as many areas of learning as possible

Use the signs and their meanings when solving missing number problems

4 + 6 = ?

4 + ? = 10

? + 4 = 10

Structured Number line

Children should initially use a given concrete number where they can place objects as they count

Single digit Below 10

They then move to drawing the arrows/jumps, again on a concrete pre-drawn line

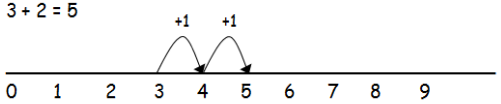
Then bridging 10

Only when this is secure should they move to drawing their own structured number line

Then to 18 (9+9)

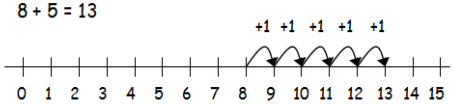
They use numberlines and practical resources to support calculation and teachers *demonstrate* the use of the numberline.

3 + 2 = 5



Children then begin to use numbered lines to support their own calculations using a numbered line to count on in ones.

8 + 5 = 13



Yr 2+

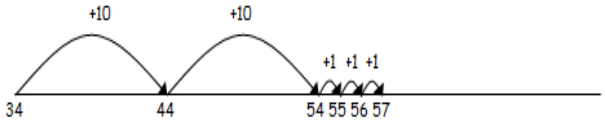
Unstructured Number line

- Children need to be able to bridge through the tens in order to progress. Always add the larger partition first e.g. 10's then units/ ones.

Children will begin to use 'empty number lines' themselves starting with the larger number and counting on.

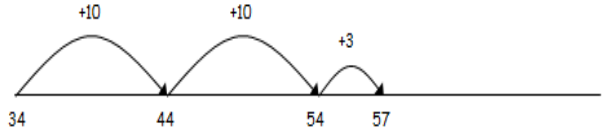
- First counting on in tens and ones.

34 + 23 = 57



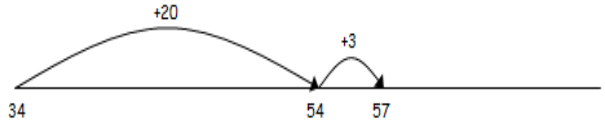
✓ Then helping children to become more efficient by adding the units in one jump (by using the known fact 4 + 3 = 7).

34 + 23 = 57



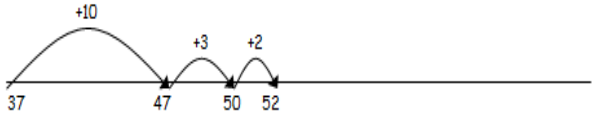
✓ Followed by adding the tens in one jump and the units in one jump.

34 + 23 = 57



✓ Bridging through ten can help children become more efficient.

37 + 15 = 52

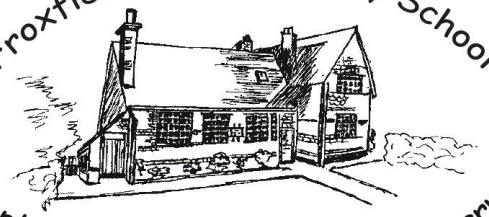


Yr 2/3	Linear Expanded Addition	62 + 14 2 + 4 = 6 60 + 10 = 70 70 + 6 = 76 No bridging ten initially with the units Then bridging ten This is a very brief step in the progression to help the understanding of the next step
Yr 3	(Mental Maths element to addition)	In year 3 children should be experiencing: Adding a 3 digit number and ones A 3 digit number and tens A 3 digit number and hundreds

Yr 3	Expanded Column Addition Adding up to 3 digits	67 + 24 11 (7 + 4) 80 (60 + 20) 91 267 + 85 12 (7 + 5) 140 (60 + 80) 200 352
Yr 4+	'Carrying' Column Addition This method must only be used when the unstructured number line is totally confident. Moving on before this is damaging as this is an abstract method.	358 + 73 Add the units 8+3=11 Carry the 1 ten Add the tens 50+70+10=130 Carry the 1 hundred Add the hundreds 300+100+=400 Total = 431 H T U 1 1 3 5 8 + 7 3 --- 4 3 1 --- Carrying digit should be put above receiving column. If introducing decimals with this, use money initially, with pounds and pence.

Yr 4	Add numbers with up to 4 digits Solve addition two-step problems in contexts
Yr 5	Add numbers with more than 4 digits Solve addition multi-step problems
Yr 6	Solve addition multi-step problems with increasingly large numbers and more complex calculations

Froxfield C. of E. Primary School



A place where children love to learn

Calculation Progression in Addition