Progression in Calculations – Addition

Mental Calculations: *Children's mental recall is the building blocks of all number work. These are developed from foundation stage and continue throughout the school. Moves to written methods do not replace the need to teach and revisit mental strategies.*

Year group	expectations	Images and links
1	Children will be able to • Read, write and understand the symbols + and = • Understand and use number bonds to and within 20 • Add one and two digit numbers up to 20 using a numberline and other apparatus	http://www.mathplayground.com/number_bonds_20.html http://www.videojug.com/film/how-to-teach-addition 
2	• Recall and use number bonds to 20 • Derive and use number bonds to and within 100 • Add a 2 digit number to a 1 digit number; a 2 digit number to a 2 digit number; three 1 digit numbers using numberlines, concrete objects and pictorial representations • Understand commutativity • Understand that addition is the inverse of subtraction • Use inverses to check answers	http://www.mathplayground.com/PartPartWhole.html 

3	• Add 3 digit numbers to 1 digit, 2 digit and 3 digit numbers mentally • Add numbers up to 3 digits using a *columnar method* • Use estimation and inverses to check answers Before pupils can begin to learn *to do this* there are a number of skills and concepts that need to have been developed in order to carry out column addition with conceptual understanding: Visualise and understand how a three-digit number can be partitioned and recombined into multiples of 100, 10 and 1 with both concrete and abstract representations (i.e. base 10 (concrete) or arrow cards) Visualise the relative quantity of the numbers. Know the value of a digit because of its position in a number Know that addition is commutative Be able to say that a three-digit number is greater than *a* but less than *b* Be able to mentally add: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds.	https://www.ncetm.org.uk/resources/46773 They progress to adding the least significant digits in preparation for carrying. https://www.youtube.com/watch?v=KVi3FFFGKKM https://www.youtube.com/watch?v=np1UzwuJ7JE 67 + 24 = 11(7+4) + 80 (60+20) = 91 267 + 85 = 12 (7+5) + 140(60+80) + 200 = 352 They then progress to the traditional carrying method, for example - https://www.youtube.com/watch?v=DVngiJtsLBs 789 + 642 becomes 7 8 9 + 6 4 2 1 4 3 1 1 1 Answer: 1431
4	• Add numbers up to 4 digits using a columnar method	
5	• Add numbers with more than 4 digits	
6	• Add numbers with more than 4 digits	

Vocabulary for Addition

Add
Sum
Total
Altogether
One more, two more…..
How many more to make….?
Inverse

Children should be encouraged to approximate their answers before calculating.

Children should be encouraged to check their answers after calculating using an appropriate strategy.

Children should be encouraged to consider if a mental calculation would be more appropriate before using a written method.