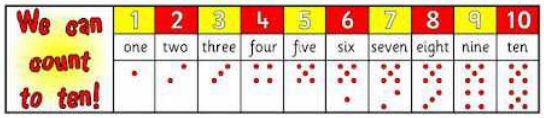
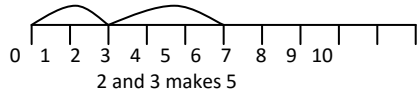
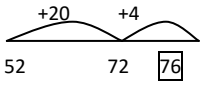
Progression in Calculation – **Minimum Expectations in Addition**

Year	Calculating	Counting
	Children will notice that a group of things changes in quantity when something is added. Children will sing some addition rhymes, knowing to add.	Teacher recording if appropriate
Minimum expectation by end of EYFS	Practical, counting objects and combining sets. Use of number tracks/ counting sticks. Making their own.	Use of number tracks  Use of Numicon, base 10 and tens frames
Y1	(a)  2 and 3 makes 5 (b) 2 + 3 = □ 5 + 3 + 1 = 9 □ + □ = 4 10 = 6 + □ Understand addition as: + combining sets to make a total + steps along a number track moving towards a number line (counting on) + can be done in any order Continued use of counting sticks, Numicon, bundles of straws in tens and other concrete apparatus up to 10. Using empty number lines up to 20. Addition problems to be discussed and solved in familiar practical contexts, including using quantities. Problems should include the terms *put together, add, altogether, total, distance between and more than.* Use practical and informal written methods to support the addition of 1 digit numbers or a multiple of 1- to a 1digit or 2 digit number. <u>Mental Calculation:</u> Emphasis on mental calculations Memorise and reason with number bonds to 10 and 20 Know the 55 addition facts 0+0= up to 9+9= (use Singapore Method) Recognise the effect of adding zero. Record simple addition calculations in a number sentence using +, - and = signs. Recognise the relationship between addition and subtraction and use the word 'inverse': 3 + 7= 10, 7 + 3= 10, 10 - 7= 3, 10 - 3= 7	Counting to and across 100 beginning with 0 or 1, or from any given number. Counting up to 100 in steps of 2, 5 and 10: 20+10 22+10 20+2

Y2

(a) 52 + 24 (b) 61 + 14 = ☐
☐ + △ = 9



Children now using empty number lines.
Ensure children to keep largest number whole. Initially, children may need to do 2 jumps of 10 rather than 1 jump of 20 e.g. 52 + 10 + 10 + 4 =

(c) 12 + 7 + 4 = ☐

HT1s to be used when partitioning is introduced.
Partitioning must include different combinations:
e.g. 10 + 2 but also 12= 7 + 5, 12= 6 + 6

When children have a good understanding of place value and partitioning introduce the column methods with addition that does not cross the tens boundary (re-grouping) using concrete apparatus laid out in column form

Calculations to include money, equipment and words: e.g.

22p+34p
= 50p and 6p- 56p

Using Numicon or base 10 to show 34p+22p (**record calculations using sticks (to represent tens) and dots (to represent ones**)

Link this to 34p
+22p
56p

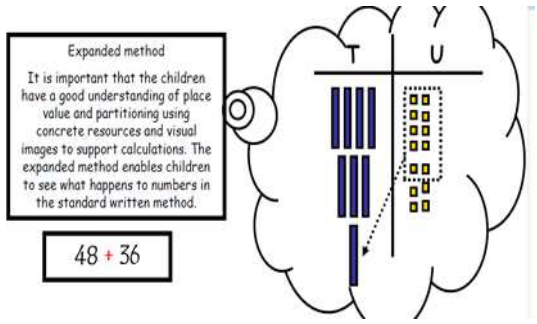
Use of the inverse to check calculations:
e.g. 32 + 14 = 46
46 – 14 = 32
46 – 32 = 14
Commutativity and associativity to be established:
e.g. 5+ 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5

Mental Calculations:
Pupils to undertake mental calculations with jottings starting with informal jottings: e.g.
32 + 15 =
30 + 10 = 40
2 + 5 = 7
40 + 7 = 47
Progressing to 40 7 = 47
Records mental calculations in a number sentence.
Use knowledge of number facts to check answers.

Counting in steps of 2, 3 and 5 from zero.

Counting in 10's from any number.

Rounding to the nearest multiple of 10 (up to 100) using a number line where appropriate.

Y3	Pupils build on their understanding of place value, partitioning and their concrete experiences to develop column methods of addition which bridge the tens, then hundreds, initially in the expanded form. The 1s column is to be addressed first (the east significant number). Pupils should begin with 2 digit numbers and progress to 3 digit numbers.  67+ 83 + 24 42 11 5 80 120 91 125 and check answer Progressing to 3 digit numbers 124+ 137 11 50 200 261 Pupils to practise solving varied addition questions. Learn to use a calculator to check (along with other methods learned in Y3) Estmate answers to questions and use the inverse to check: e.g. 56 + 48 60 + 50 = 110 Rounding to the nearest multiple of 10 56 + 48 +104 Checking answer against the estimate 104 – 48 = 56 104 – 56 = 48 Is it reasonable? To include money using decimal notation: e.g. £1.24 + £2.50 = £3.74 Mental Calculation: (a) Pupils continue to use the number line to support mental calculation +50 +4 +3 86 + 57 86 136 140 143 Mental calculations with jottings: e.g. 378 + 8 476 + 50 272 + 200	Count on from zero in multiples of 4,8,50, 100. Find 10 or 100 more than a given number. Count up and down in tenths. Rounding up to the nearest multiple of 100 (up to 1000) using a number line where appropriate. Rounding to the nearest whole number (numbers with decimal place) Add Fractions with the same denominator within one whole e.g. 5/7 + 1/7 = 6/7
Y4	Pupils use their understanding of the expanded column method of addition to progress to use the compact method. (a) 587 (b) 587 (c) 3587 (d) £ 6.72 + 475 +475 + 675 8.56 12 1062 4262 + 2.30 150 11 111 £17.58 900 11 1062	Mental methods from Y3 to be reinforced. Counting in multiples of 6, 7, 9, 25, 1000 Count 1000 more/ less than a given number. Count backwards through 0 (negative numbers).

	and check answers Progress to addition of numbers up to 4 digits: e.g. 3268 + 378, 2479 + 1367 Extend to decimals with 2 decimal places (link to money and measure). Learn to use a calculator to check (along with other methods learned in Y3). <u>Mental Calculation:</u> Partition one number when adding mentally (a) 625 + 48 = +40 +8 625 665 673 Estimate and use inverse to check answers.	Count up and down in hundredths. Count up and down in simple fractions: e.g. ½, ¼, 1/3, 1/5, 1/10 etc. Rounding to the nearest whole number (numbers with 1 decimal place). Be able solve multi-step addition problems in contexts.
Y5	Pupils use the compact column method to calculate with decimal numbers, and with larger whole numbers. £ 6.72 + 8.56 <u>+ 2.30</u> £ 17.58 Addition of whole numbers with more than 4 digits: e.g. 32856 + 3974 Addition of decimals up to 3 decimal places: e.g. 3.24 + 4.84 1.643 + 3.37 Continue to use the inverse and a calculator to check answers. <u>Mental Calculations</u>: Addition of larger numbers mentally, partitioning the smaller number: e.g. 587 + 475 = +400 +70 +5 587 987 1057 1062 ☐ Addition of decimals with jottings: e.g. 3.2 + 4.6 3 + 4 = 7 0.2 + 0.6 = 0.8 7 + 0.8 = 7.8 To know complements to 1: e.g. 0.83 + 0.17 = 1 To use rounding to check answers and determine accuracy.	Count forwards and backwards in 1/1000, 1/100, 1/10, 1, 10, 100, 1000 up to 1 million. Counting in decimals up to 3 decimal places and fractions (bridging zero) Counting in simple fractions ½, 1/3, ¼, 1/5, 1/10 Rounding numbers with 2 decimal places to the nearest whole number and 1 decimal place. To be able to solve multi-step addition problems in contexts.
Y6	To continue to reinforce Y5 expectations and to build on these including: - Negative numbers - Fractions: e.g. ¼ + 2/3 Addition of larger whole numbers using the columnar method. Addition of decimals with differing numbers of decimal places using the columnar method. Pupils may fill empty columns with zeros initially, to preserve place value. (a) 7648 (b) 124.9 + 7.25 + <u>1486</u> 124.90* <u>9134</u> <u>+ 7.25</u> 111 <u>132.15</u> 11 To add fractions with different denominators and mixed numbers using the concept of equivalent fractions.	Continue to count in different intervals including decimals and fractions: e.g. ¾, 2/3 etc. Rounding to a specified accuracy up to 2 decimal places. To be able to solve addition multi-step problems in contexts.

	To continue to estimate and to use the approximate symbol (≈) for any calculation including decimals. <u>Mental Calculation:</u> To continue to reinforce and build up on Y5 expectations. Adding larger numbers mentally, supported by the number line, partitioning the smaller number (a) 7648+1486 = +1000 +400 +80 +6 7648 8648 9048 9128 9134 ☐	