Darley Dene - Addition Calculation Policy

Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

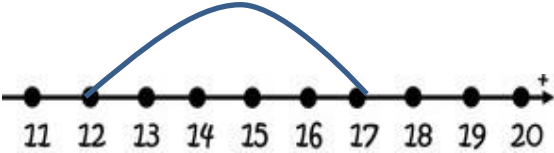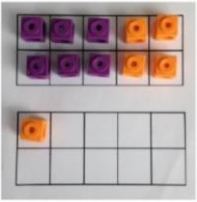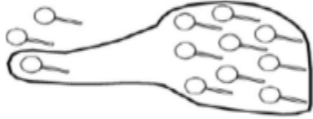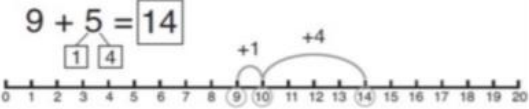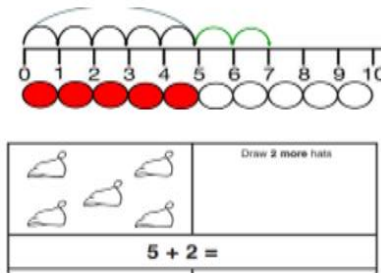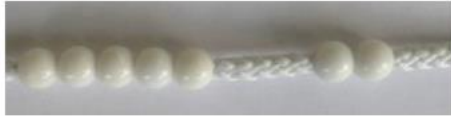| Year 1	
Fluency	**End of year expectations**
Count forwards, to and across 100, beginning with 0 or 1 or from any given number Switch count between tens and ones e.g. 10, 20, 30, 31, 32, 33 … Represent and use number bonds up to 20 (establish addition and subtraction as related operations) Find one more than a number Find ten more than a number Count in multiples of 2s, 5s and 10s starting on multiples to highlight pattern recognition	O + O TO + O Numbers up to 20 (including adding zero) Children must experience combining two, and then more than two groups of objects using counting on and the language of addition e.g. add, plus, more Children must experience increasing numbers e.g. what is two more than seven? Compare quantities to say how many less and/or how many more

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)

	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Combining two parts to make a whole: **part-whole model**	Use a part - 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.	Use the part – part whole model to move into the abstract. 10 = 4 + 6

Objective and strategy	**Concrete (build it)**	**Pictorial (draw it)**	**Abstract (write it)**
Starting at the bigger number and counting on	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. 11 12 13 14 15 16 17 18 19 20	Place the larger number in your head and count on the smaller number to find your answer. **5 + 12 = 17**

Regrouping to make 10.
 	
This is an essential skill for column addition later.
	Start with the bigger number and use the smaller number to make 10. Use ten frames.
	
	(6 + 5)
		Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10.
		
		3 + 9 =
		
		9 + 5 = 14
		  1 4
		  +1 +4
		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
			7 + 4= 11
			
			If I am at seven, how many more do I need to make 10. How many more do I add on now?
			
			Children to develop an understanding of equality e.g.
			 6 + □ = 11
			6 + 5 = 5 + □
			 6 + 5 = □ + 4

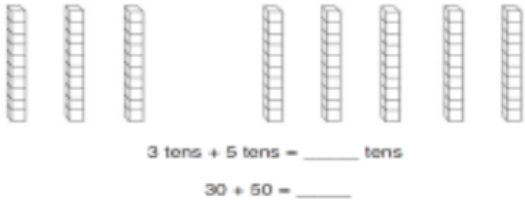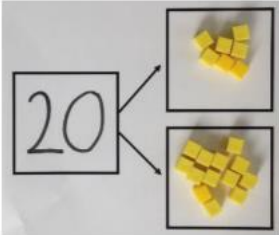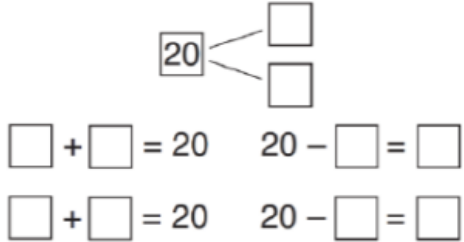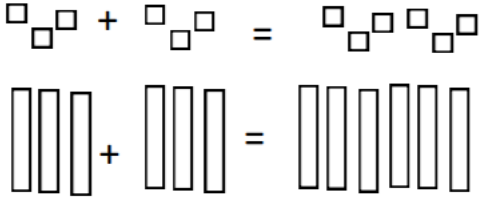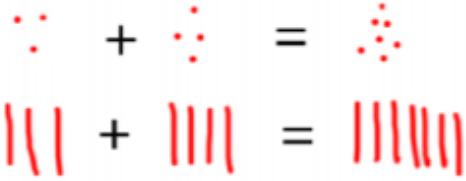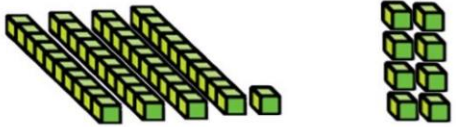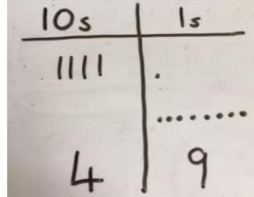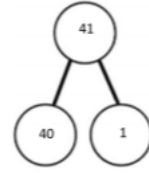| **Represent & use number bonds and related subtraction facts within 20** | 2 more than 5 | Draw **2 more** hats 5 + 2 = | Emphasis should be on the *language* '1 more than 5 is equal to 6.' '2 more than 5 is 7.' '8 is 3 more than 5.' |
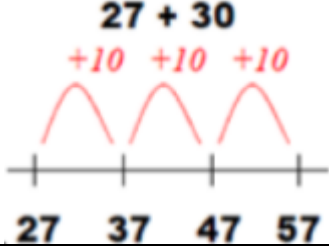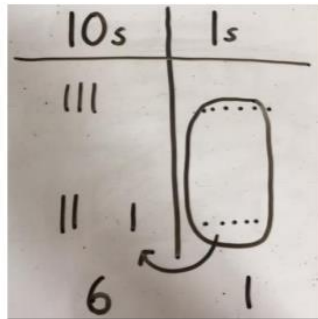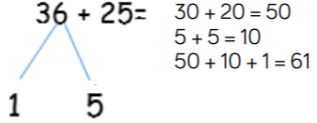
Year 2
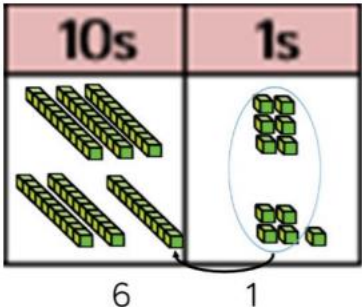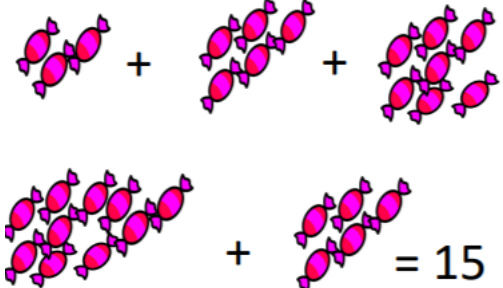
Fluency	End of year expectations
Show increasing fluency in deriving pairs of numbers up to 10 and then up to 20 Use knowledge to derive and use number facts up to 100 Add numbers mentally including: TO + O TO + tens TO + TO O + O + O	Children should be able to partition numbers in different ways e.g. as 2+2+2+1 or 5+3 or 23 as 20 +3 or 10+13 TO + O TO + tens TO + TO O + O + O Children should use concrete objects, pictorial representations and add numbers in different contexts e.g. money, measures Children should understand the language of sum. Ensure children understand that addition is commutative (can be done in any order)

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Adding multiples of ten	Model using dienes and bead strings 50 = 30 + 20 	Use representations for base ten 3 tens + 5 tens = _____ tens 30 + 50 = _____	20 + 30 = 50 70 = 50 + 20 40 + □ = 60

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Use known number facts Part part whole	Children explore ways of making numbers within 20	$\Box + \Box = 20$ $20 - \Box = \Box$ $\Box + \Box = 20$ $20 - \Box = \Box$	$\Box + 1 = 16$ $16 - 1 = \Box$ $1 + \Box = 16$ $16 - \Box = 1$
Using known facts	If I know that 3+3=6, I also know that 30+30=60	Children draw representations of T and O	$3 + 4 = 7$ *leads to* $30 + 40 = 70$ *leads to* $300 + 400 = 700$
Bar model			

Add a two digit number and ones	TO + O using base 10. Continue to develop understanding of partitioning and place value. 41 + 8	Children to represent the base 10 e.g. lines for tens and dot/crosses for ones	$41 + 8$ $1 + 8 = 9$ $40 + 9 = 49$ $1 + 8 = 9$ $40 + 9 = 49$

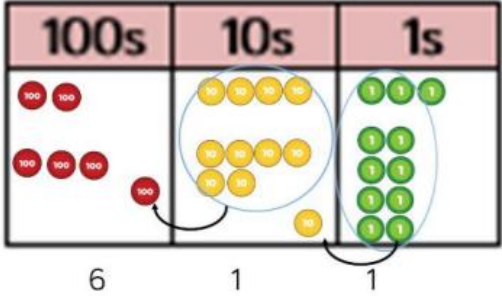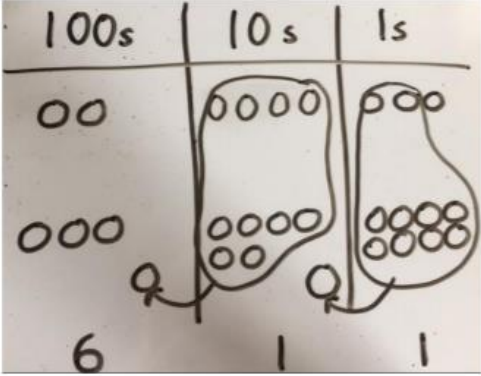| Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Add a 2 digit number and tens	$25 + 10 = 35$ Explore that the ones digit does not change	**27 + 30** +10 +10 +10 27 37 47 57	27 + 10 = 37 27 + 20 = 47 27 + __ = 57
Add two 2-digit numbers	TO + TO using base 10. Continue to develop understanding of partitioning and place value. 36 + 25	Children to represent the base 10 in a place value chart	Looking for ways to make 10. $30 + 20 = 50$ $5 + 5 = 10$ $50 + 10 + 1 = 61$

Add three 1-digit numbers	Combine to make 10 first if possible, or bridge 1o then add third digit	Regroup and draw representation.	Combine the two numbers that make/ bridge ten then add on the third.

Year 3	
Fluency	**End of year expectations**
Count in ones, tens and hundreds maintaining fluency through varied and frequent practice (forwards and backwards) Count from 0 in multiples of 4, 8, 50 and 100 Find 10 or 100 more than a number Mentally add HTO + ones, HTO + tens, HTO + hundreds	Add numbers with up to three-digits (leading to formal written column method) Solve problems in different contexts including missing number problems Children should partition numbers, up to 1000, in different ways e.g. 100 + 40 + 6 or 100 + 30 + 16
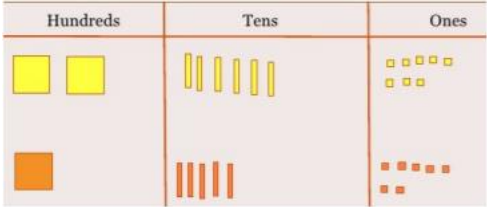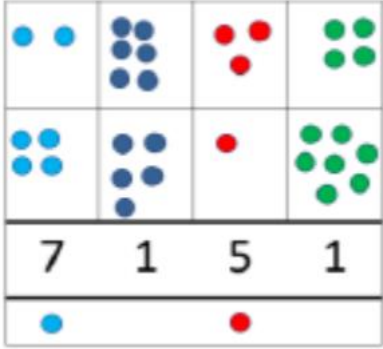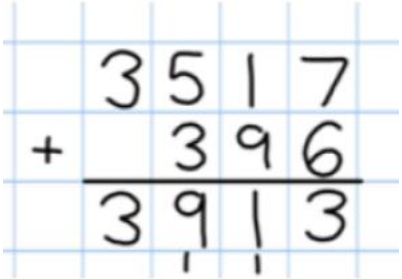
Perform mental calculations with two-digit numbers, the answer could exceed 100	

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Column Addition	Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.	Children to represent the counters in a place value chart, circling when they make an exchange.	Move on to the formal column method of addition. Add the ones first, then the tens, then the hundreds. $$243$$ $$+368$$ $$\overline{6\ 11}$$ $$1\ \ 1$$
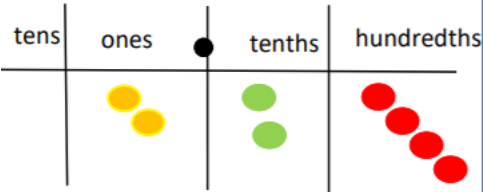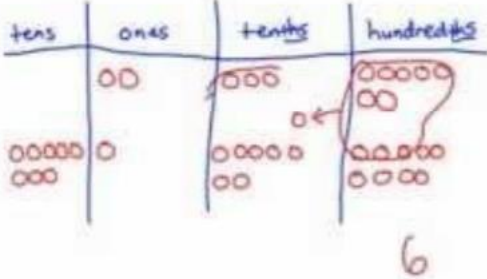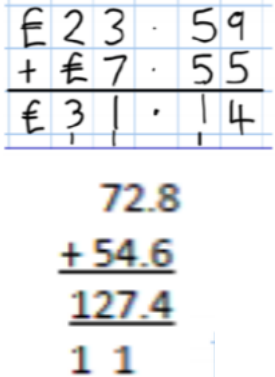
Year 4	
Fluency	**End of year expectations**
Count in 6s, 7s, 9s, 25s and 100s Find 1000 more than a number Perform mental calculations with increasingly large numbers to aid fluency	Add numbers with up to four-digits (formal written column method) Solve two-step problems in different contexts including missing number problems

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Add numbers with up to 4 digits	Children continue to use dienes or place value counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand. 	Draw representations using place value grid. 	Continue from previous work to carry hundreds as well as tens. Relate to money and measures.

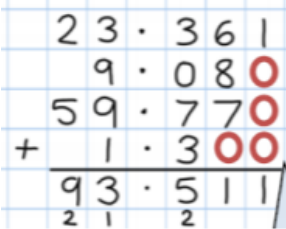| Year 5	
Fluency	**End of year expectations**
Count forwards in powers of ten up to 100000 Count forwards in positive and negative whole numbers through zero Practise mental calculations with increasingly large numbers Practise fluency of written methods	Add numbers with more than four-digits (formal written column method) Solve multi-step problems selecting and justifying methods Practise mental calculations with increasingly large numbers

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Add decimals with 2 decimal places, including money.	Introduce decimal place value counters and model exchange for addition. tens ones tenths hundredths	2.37 + 81.79 	£23.59 + £7.55 £31.14 72.8 +54.6 127.4 1 1

Year 6	
Fluency	**End of year expectations**
Count in tens and hundreds increasing fluency of order and place value	Add numbers with more than four-digits (formal written column method)
Perform increasingly complex mental calculations and those with increasingly large numbers to aid fluency	Solve more complex calculations mentally

Children should extend the carrying method to number with any number of digits.
Using similar methods, children will
- add several numbers with different numbers of digits;
- begin to add two or more decimal fractions with up to four digits and either one or two decimal places;
- know that decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. 401.2 + 26.85 + 0.71.

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
Add several numbers of increasing complexity Including adding money, measure and decimals with different numbers of decimal points.	As Year 4/5	As Year 4/5	Insert zeros for place holders. 23.361 9.080 59.770 + 1.300 93.511

			$\begin{array}{r} 81,059 \\ 3,668 \\ 15,301 \\ +\ 20,551 \\ \hline 120,579 \end{array}$