Lowfield Primary School
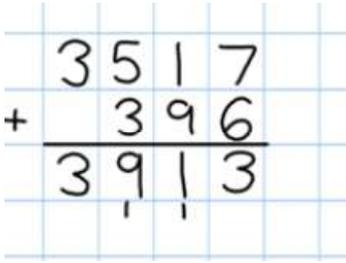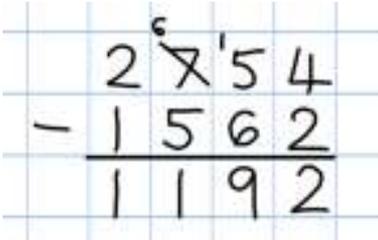
Calculation Policy

Addition	Subtraction
Year 4 (Step 25 –27)	
Where "borrowing" or "carrying over" is needed, this is referred to as exchanging.	
As in year 3 then progress the place value to two four digit numbers. Extend to adding more than two numbers. 3 5 1 7 + 3 9 6 3 9 1 3	As in year 3 then progressing to compact method of four digit numbers. 2 7 5 4 – 1 5 6 2 1 1 9 2
Reinforce correct place value by reminding them the actual value is 5 hundreds add 3 hundreds, not 5 add 3, for example. Use and apply this method to money (2 decimal places) and measurement values.	
Resources: Dienes, arrow cards, numicon, place value counters	
Always encourage children to consider the best method for the numbers involved—mental, counting on, counting back or written method, so they don't, "use a sledge-hammer to crack a nut."	
A variety of mental strategies must be taught and practised, including counting on to find the difference where numbers are closer together, or where it is easier to count on.	
Key vocabulary: add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, „carry", expanded, compact, thousands, hundreds, digits, inverse	Key vocabulary: equal to, take, take away, less, minus, subtract, leaves, distance be-tween, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit, inverse
Key skills for addition at Y4: • Select most appropriate method: mental, jottings or written and explain why. • Recognise the place value of each digit in a four-digit number. • Round any number to the nearest 10, 100 or 1000. • Estimate and use inverse operations to check answers. • Solve 2-step problems in context, deciding which operations and methods to use and why. • Find 1000 more or less than a given number. • Continue to practise a wide range of mental addition strategies, ie. number bonds, add the nearest multiple of 10, 100, 1000 and adjust, use near doubles, partitioning and recombining. • Add numbers with up to 4 digits using the	Key skills for subtraction at Y4: • Subtract by counting on where numbers are close together or they are near to multiples of 10, 100 etc. • Children select the most appropriate and efficient methods for given subtraction calculations. • Estimate and use inverse operations to check answers. • Solve addition and subtraction 2-step problems, choosing which operations and methods to use and why. • Solve simple measure and money problems involving fractions and decimals to two decimal places. • Find 1000 more or less than a given number.

- formal written method of column addition - Solve 2-step problems in contexts, deciding which operations and methods to use and why. - Estimate and use inverse operations to check answers to a calculation.	- Count backwards through zero, including negative numbers. - Recognise place value of each digit in a 4-digit number Round any number to the nearest 10, 100 or 1000 - Solve number and practical problems that involve the above, with increasingly large positive numbers.

Multiplication	Division
Year 4 (Step 25 – 27)	
Multiply 2 and 3-digits by a single digit, using all multiplication tables up to 12 x 12.	**It is important that children understand division as repeated subtraction. This could be done by showing the children how to divide 24 by 2 as single repeated subtraction of 2 (24 - 2 - 2 – 2 etc.) Leading to showing the efficiency of chunking method eg 24 – (10 x 2).**

Expanded Method	**Expanded Method (for consolidation if required)**	**Short division TU ÷ U**

1 3 6
X   7
  4 2 (7 x 6)
2 1 0 (7 x 30)
7 0 0 (7 x 100)
9 5 2
	38 x 7 =
	
	30 + 8
	x 7
	     56 (7 x 8 = 56)
	   210 (7 x 30 = 210)
	   266
	
	This method may be necessary for some children.
		96 ÷ 6
		
		$$\begin{array}{r} 16 \\ \hline 6\ )\ 96 \\ -\ 60 \\ \hline 36 \\ -36 \\ \hline 0 \end{array}$$
		10x6
		6x6
		Answer : 16

Compact Method	196 ÷ 6

3 2 7
×   4
1 3 0 8
  1   2
	$$\begin{array}{r} 32\ r\ 4 \\ \hline 6\ )\ 196 \\ -\ \ 180 \\ \hline 16 \\ -\ \ 12 \\ \hline 4 \end{array}$$
	30x6
	2x6
	
	Answer : 32 remainder 4
	        or 32 r 4

| Approximate before they calculate, and make this a regular part of their calculating, going back to the approximation to check the reasonableness of their answer. e.g:
—346 x 9 is approximately 350 x 10 = 3500‖
Record an approximation to check the final | Any remainders should be shown as integers not decimals, i.e. 14 remainder 2 or 14 r 2. |

answer against.	
Multiply multiples of ten and one hundred by a single-digit, using their multiplication table knowledge.	Children should be able to decide what to do after division and round up or down accordingly. For example 62 ÷ 8 is 7 remainder 6, but whether the answer should be rounded up to 8 or rounded down to 7 depends on the context. e.g. I have 60p. Sweets are 8p each. How many can I buy? Answer: 7 (the remaining 4p is not enough to buy another sweet) Apples are packed into boxes of 6. There are 62 apples. How many boxes are needed? Answer: 10(the remaining 2 apples still need to be placed into a box)
Recall all times tables up to 12 x 12	
Key vocabulary: groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, groups of, sets of, lots of, equal groups, times, multiply, times as big as, once, twice, three times... partition, grid method, total, multiple, product, sets of, inverse	**Key vocabulary:** share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, „carry", remainder, multiple, divisible by, factor
Key skills for multiplication at Y4: • Count in multiples of 6, 7, 9, 25 and 1000 • Recall multiplication facts for all multiplication tables up to 12 x 12. • Recognise place value of digits in up to 4-digit numbers • Use place value, known facts and derived facts to multiply mentally, e.g. multiply by 1, 10, 100, by 0, or to multiply 3 numbers. • Use commutativity and other strategies mentally 3 x 6 = 6 x 3 , 2 x 6 x 5 = 10 x 6 , 39x7 = 30 x 7 + 9 x 7. • Solve problems with increasingly complex multiplication in a range of contexts. • Count in multiples of 6, 7, 9, 25 and 1000 • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	**Key skills for division at Y4:** • Recall multiplication and division facts for all numbers up to 12 x 12. • Use place value, known and derived facts to multiply and divide mentally, including: multiplying and dividing by 10 and 100 and 1. • Pupils practise to become fluent in the formal written method of short division with exact answers when dividing by a one-digit number • Pupils practise mental methods and extend this to three-digit numbers to derive facts, for example 200 × 3 = 600 so 600 ÷ 3 = 200 • Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.