



Leconfield Primary School Calculation Policy provides guidance for the methods we use to teach our children the four main operations of mathematics.

Throughout this document you will see examples of questions and the methods which the children will be taught in order to complete the questions.

Alongside these methods we use practical equipment to ensure that all pupils have a solid and secure foundation of the concrete before moving to pictorial representations and then into the abstract.



The part whole model



The part whole model is a tool for partitioning (splitting up a number), addition and subtraction, it shows that one part plus one part equals the whole. It can be used for subtraction to with missing numbers and can be used with counters, tens and ones and also numbers to help children understand how numbers are made.

#### The tens frame



The tens frame is an extremely useful tool for understanding number bonds to 10 and also to recognise what 10 looks like. By using different coloured counters pupils can see how the number 10 is made in different ways.

More than one tens frame can be used to show numbers greater than ten or the counters could be changed to tens in order to represent one hundred.

When becoming familiar with the tens frame children will begin to see that the top line represents 5 and the full frame is 10. We always encourage the top lined to be completed first to help with this understanding of 5 and 5.



## Methods you might see





2	4	+	4	8	=	7	2
	/	+ 20		$\backslash$	+ 4		
48				68			72
7	2		4	8	=	2	4
		- 40		$\mathbf{n}$	- 8		
72				32		24	
	1				6		
	2	4			X	12	
	4	8	+		4	8	-
	7	2			2	4	

# Multiplication and short division.

	3	7	4	
			6	x
1	8	0	0	
	4	2	0	
		2	4	+
2	2	4	4	

374 x 6 = 2244

- (300 x 6 = 1800)
- (70 x 6 = 420)
  - $(4 \times 6 = 24)$

Short multiplication and division is used as pupils become more fluent in number facts.

4554	÷	6	=	759
	0	7	5	9
6	4	(45)	35	54

#### **Recognising numbers**

Subitising - subitising means recognising numbers without having to count. In nursery we want our children to be able to recognise 1, 2 and 3 without counting.



# Counting songs and rhymes

Pupils will learn and join in with counting songs and rhymes. These rhymes might count up or they might count down.



Children will also explore counting forwards and backwards verbally.



### Leconfield calculation policy Nursery



#### Exploring patterns



Children begin to explore patterns in the learning environment and in activities which they are completing.

Colours might also be used to make patterns.



#### Positional language

Pupils build up their understanding of positional language.

On, next to, beside, under, down, between.



They begin to use this language to help them describe where things are.

#### Number bonds to 10 Subitising Subitising means that children can recognise a number without counting. We start this by looking at patterns of numbers, such as on a dice and then random dots for pupils to subitise. Some children will group these, others will be able to see the number without counting. Children will begin to use the tens frame and the part-whole model to be able to identify all of the number bonds to 10. Our song: 10 5 and 5 add up to 10, 6 and 4 make it again. 7 and 3 they also do, 3 Guess what so do 8 and 2. 9 and 1, 10 and 0. Looks like you are a The part whole number bond hero! shows that both parts equal the whole. Leconfield calculation policy ,confier "confie Reception

#### Counting

Accuracy of counting is an essential skill which pupils learn in reception. Some children will be able to subitise, others will need to move the objects to improve their accuracy of counting.



Pupils must also be able to recognise the numeral which represent the number.



#### One more and one less

Children will begin to understand the idea of one more and one less.

This will be seen practically, with pupils adding one more or taking one away, but will then become part of their understanding of the numerals.





Doubling: Children will also begin to explore doubling, using practical equipment and then looking at dominoes or spots on ladybirds to begin to understand double and what they look like.



I can add two two digit numbers.

3	5	+	5	7	=	9	2
/							
		+ 30			+	5	
57				87			92
					1		
	3	5			3	5	
	4	3	+		5	7	+
	7	8			9	2	

In Year 2 pupils are introduced to formal methods of addition, starting with jumps on the number line and the using columns to add together two numbers.

tables too.

### Subtraction

I can subtract two two digit numbers.

9	4	-	5	7	=	3	7
		- 50		$\mathbf{i}$	-	7	
94				44			37
					8		
	8	5			ÌQ	10	
	4	3	-		5	7	-
	4	2			3	3	

In Year 2 pupils are introduced to formal methods of subtraction. On the number line we start with the larger number and jump back. We also teach decomposition (borrowing)



#### I can add numbers with up to three digits, using formal written methods of columnar addition.

				1	1		
2	3	6		5	6	9	
4	2	3	+	2	8	6	+
6	5	9		8	5	5	

In Year 3 children continue to build on their knowledge and understanding of column addition.

Children understand the methods of carrying and know the value of each of the columns. Hundreds, tens and ones. Children become efficient with these methods and confident in their explanations.

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### Subtraction

I can subtract numbers with up to three digits, using formal written methods of columnar subtraction.

				7	9		
7	9	5		8	70	13	
4	2	3	-	2	8	6	-
3	7	2		5	1	7	

In Year 3 pupils continue to build on their knowledge and understanding of column subtraction.

Children understand the methods of borrowing (decomposition) and understand each column is made up: ten tens = one hundred.

Children become efficient with these methods and confident in their explanations

### Leconfield calculation policy Year 3



### **Multiplication**

I can multiply two-digit numbers by one-digit numbers, using mental and progressing to formal written methods

67	x	3	=	2	0	1	
	60	7					
3	180	21			6	7	
1						3	×
1	8	0		1	8	0	
	2	1	+		2	1	
2	0	1		2	0	1	

In Year 3 children begin by using the grid method and then progress, applying these principles to the short multiplication method.

### Division

I can divide two-digit numbers by onedigit numbers, using mental and progressing to formal written methods

86	•	2	=	43			
			81	÷	3	=	21
	4	3			2	7	
2	8	6		3	8	21	

In Year 3 children begin to explore more formal methods of division. We ask: How many times does 2 go into 8? How many times does 2 go into 6? In order to complete this pupils must understand the place value of each of the numbers. For example the 8 represents the 80 in the first question.

## I can add numbers with up to 4 digits using written methods

1	1			
4	5	6	2	
3	8	9	6	+
8	4	5	8	

Children are confident with adding together 4 digit numbers using carrying.

	7		3	
2		9		+
8	2	4	7	

Children then use these skills to help them find missing numbers for addition.

### Subtraction

## I can subtract numbers with up to 4 digits using written methods.

8	9	9		
ÌQ	ÌQ	)Q	13	
2	4	7	6	+
6	5	2	7	

Children are confident with subtracting numbers using decomposition.



Children then use these skills to help them find missing numbers to solve subtraction problems. Pupils might use the inverse.

# Primary school

### Leconfield calculation policy Year 4



### **Multiplication**

I can multiply a 3 digit number by a one digit number.



374 x 6 = 2244

(300 × 6 = 1800)

(70 × 6 = 420)

By Year 4 pupils should be fluent in their times tables up to 12 x 12. This then aids pupils with their multiplication skills and enables them to multiply numbers with 3 digit by 2 digits.

### Division

I can divide 2 and 3 digit numbers by single numbers using known facts.

544	•	4	=	126
	1	3	6	
4	5	14	24	
l				
253	•	9	=	28 r1
	0	2	8	r1
9	2	25	(73)	

Pupils to continue to develop their division skills with up to 3 digits.

Pupils also explore remainders and understand that there

are sometimes some left over.

## I can add numbers with more than 4 digits using formal methods

1	1	1			
6	4	5	6	2	
2	9	8	9	6	+
9	4	4	5	8	

Children continue to use the column methods to add numbers.

2	+	2	=	16
5.		3 .		15
x3		x5		
6	+	10	=)	16
15		15		15

Children begin to add fractions. They find a common denominator to help add the fractions correctly.

### Subtraction

## I can subtract numbers with more than 4 digits using formal methods

	7	15	9		
7	<b>)8</b>	Ŕ	ÌQ	13	
3	6	9	2	8	-
4	1	6	7	5	

Children continue to use the column methods to subtract numbers.



Children begin to subtract fractions. They find a common denominator to help subtract the fractions correctly.



### Leconfield calculation policy Year 5



### **Multiplication**

I can multiply numbers with up to 4 digits by 2 digit numbers

		3	4	2	7		
				4	6	×	
1	3	8	0	0	0		(3000 × 46)
	1	8	4	0	0		(400 × 46)
			9	2	0	+	(20 × 46)
	1	1	3	2	2		7 x 46)
1	5	7	6	4	2		

Children will use their fluency of the number facts to help with the multiplication of the larger numbers.

### Division

I can divide numbers with up to 4 digits by one digit numbers

4554	•	÷ 6 =		759
	0	7	5	9
6	4	(45)	35	54

Children continue to build on their division skills, using their knowledge of the times tables facts to assist with this.

Prime Numbers: They also begin to explore prime numbers, those numbers divisible only by themselves and one: 1, 3, 5, 7, 9, 11, 13, 17, 19, 23 ...



Leconfield calculation policy

Year 6

What is the total number of cars **parked** in the car park at 10 am?

subtraction skills.

This reasoning

problem makes

children think

about multiplication

the problem.

### Division

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I can divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division.

9252	• •	36	=	257
	0	2	5	7
36	9	92	205	(252)

6 divides into 40 with a remainder of 4

How much more does the orange weigh than the banana?

Write **one** other number that divides into 40 with a remainder of 4

This reasoning question asks the children to think about their knowledge of remainders and times tables facts to help them calculate the number which would have a remainder.

### **Multiplication**

#### I can multiply numbers with up to 4 digits by 2 digits.

There are 432 places at a dance school.

There are two age groups.

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mary set

This table shows the number of classes and the number of pupils in ach class for each age group at the moment

about	Number of pupils	Number of	Ago in yours
multiplication	in each class	classes	Age in years
and apply their	16	15	7–12
skills to solve	18	10	13–18
SKIIIS TO SOIVE			

How many more pupils can join the dance school?

						1			
1	5	x	1	6	=	2	4	0	
1	0	x	1	8	=	1	8	0	+
					+	4	2	0	
4	3	2	-	4	2	0	=	1	2