



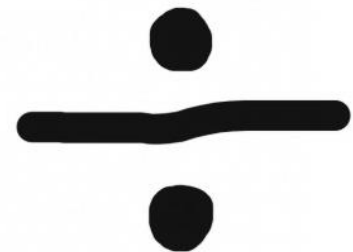
Langdon Primary School



Calculation Policy



2023-2024



NUMBER (including Roman numerals) AND PLACE VALUE

Year One

- Count to and across 100, forwards and backwards, beginning with 0 or 1 or from any given number
- Count, read and write numbers to 100 in numerals
- Count in 2s, 5s and 10s
- Identify one more and one less than a given number
- Use the language of: equal to more than, less than, most, least
- Read and write numbers 1-20 in numerals and in words
- Identify numbers using objects and pictorial representations including on a number line
- Represent numbers using objects and pictorial representations including on a number line

Year Two

- Count in steps of 2, 3 and 5 from 0
- Count in tens from any given number, forwards and backwards
- Compare and order numbers from 0-100
- Use the $<$, $>$ and $=$ signs
- Read and write number to at least 100 in numerals and words
- Recognise the value of each digit in a two-digit number (tens and ones)
- Identify, represent and estimate numbers using different representations including on a number line

Year Three

- Count from 0 in multiples of 4, 8, 50 and 100
- Find 10 or 100 more or less than a given number
- Compare and order numbers to 1000
- Read and write numbers to 1000 in numerals and words
- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- Recognise the value of each digit in a three-digit number (hundreds, tens and ones)
- Identify, represent and estimate numbers using different representations

NUMBER (including Roman numerals) AND PLACE VALUE

Year Four

- Count backwards through 0 to include negative numbers
- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number
- Order and compare numbers beyond 1000
- Compare numbers with the same number of decimal places up to two decimal places
- Read Roman numerals to 100
- Recognise the value of each digit in a four-digit number (thousands, hundreds, tens and ones)
- Find the effect of dividing a one or two-digit number by 10 or 100, identifying the value of the digits in the answer as units, tenths and hundredths
- Round any number to the nearest 10, 100 or 1000
- Round decimals with one decimal place to the nearest whole number
- Identify, represent and estimate numbers using different representations

Year Five

- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0
- Count forwards and backwards in steps of powers of 10 for any given number up to 1 000 000
- Read, write, order and compare numbers to at least 1000000 and determine the value of each digit
- Read Roman numerals to 1000 and recognise years written in Roman numerals
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- Round any number up to 1000000 to the nearest 10, 100, 1000, 10 000 and 100 000

Year Six


- Use negative numbers in context and calculate intervals across zero
- Read, write, order and compare numbers to at least 10 000 000 and determine the value of each digit
- Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
- Round any whole number to a required degree of accuracy

ADDITION

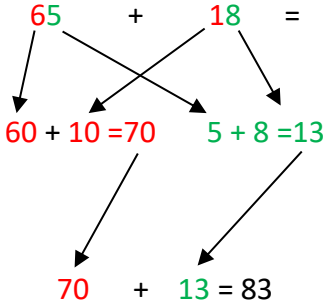
Year One

- Know how to combine 2 sets of objects together by counting them
- Know part-part-whole and use this when talking about 'number sentences' (first, next, then)
- Use part-part-whole to solve empty box questions eg. $8+5=\square$
- Know number bonds to 10 including 0
- Use number tracks to support counting and addition
- **Be able to explain and apply**

Year Two

- Know number bonds to 20
- Apply to addition calculations
 $16 + 4 =$
 $37 + 3 =$
- Move from number tracks to number lines
- Add a single and a 2-digit number
 $6 + 23 =$
 $23 + 6 =$
- Add two 2-digit numbers
 $21 + 14 =$

- Then...
 $62 + 31 = 93$
 $60 + 30 = 90$
 $2 + 1 = 3$
 $90 + 3 = 93$
- Add multiples of ten to each other and to two-digit numbers:
 $40 + 50 =$
 $54 + 20 =$
- **Be able to explain and apply**

Year Three

- Know number bonds to 100, including ones
 $34 + 66 = 100$
- Add multiples of ten to reach hundreds and to cross the hundreds boundary
 $150 + 50 = 200$
 $137 + 90 = 227$
- Mentally be able to find the difference between the following:
 $HTU - U$
 $HTU - T$
 $HTU - H$
- Use informal written method using partitioning:

- Add three digit numbers
- **Be able to explain and apply**

ADDITION

Year Four

- Adapt informal written method from Year 3 to vertical expanded layout
- Start with TU + TU then HTU + HTU

$$\begin{array}{r} 60 + 5 \\ \underline{10 + 8} \\ 70 + 13 = 83 \end{array}$$

- Use expanded layout to solve money and measures problems
- **Be able to explain and apply**

Year Five

- Extend informal written methods to column addition of two integers up to 10,000
- Use with decimal money, length, weight, capacity
- Continue to stress mental and informal strategies of appropriate numbers
- Introduce by the end of the year, formal column methods of addition, including bridging the columns by carrying a value forward:

$$\begin{array}{r} 5346 \\ + 1578 \\ \hline 6924 \\ 11 \end{array}$$

- **Be able to explain and apply**

Year Six

- Extend use of column addition to decimals and different contexts such as money, length, weight, capacity
- **Be able to explain and apply**

SUBTRACTION

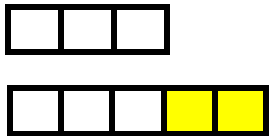
Year One

- Know number bonds to 10 including 0
 $7 - 3 = 4$
- Use part-part-whole to solve empty box problems eg.
 $13 - \square = 7$
- One stop word problems eg.

Find the difference between.....

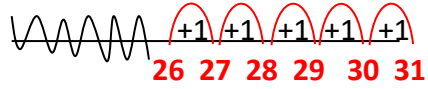
How much longer is the second stick?

How many must I add to make the 2 sticks the same?


- Be able to explain and apply

Year Two

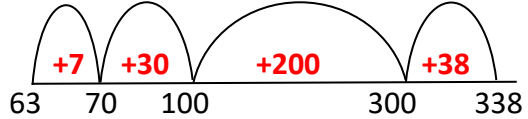
- Subtraction of multiples of ten
 $70 - 30 = 40$
- Subtraction of multiples of ten from a two-digit number
 $34 - 20 =$
- Link addition and subtraction facts, using the inverse operation to check
 $6 + 4 = 10$
 $4 + 6 = 10$
 $10 - 4 = 6$
 $10 - 6 = 4$
- Use mental strategies to find the difference between the following:
 $TU - U$
 $TU - T$
- Use manipulatives, numbertracks or numberlines to 'find the difference' between $TU - TU$:


- Be able to explain and apply

Year Three

- Know number bonds to 100 including ones
 $100 - 34 = 66$
- Mentally be able to find the difference between the following:
 $HTU - U$
 $HTU - T$
 $HTU - H$
- Informal written method using counting on

Find the difference between 338 and 63



$200 + 30 + 30 + 8 + 7 = 275$
 or
 $200 + 38 + 30 + 7 = 275$
- Introduce column subtraction with no exchange across columns
- Use the inverse operation to check
- Be able to explain and apply

SUBTRACTION

Year Four

- Mentally be able to find the difference between the following:
ThHTU – U
ThHTU – T
ThHTU – H

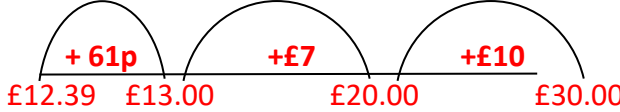
- Extend informal written method using counting on – focus on increasing efficiency and problems involving money, measures and time

- Be able to explain and apply

Year Five

- Mentally be able to find the difference between the following:
¹⁰Th Th H T U – U
¹⁰Th Th H T U – T
¹⁰Th Th H T U – H

- Consolidate informal written method using counting on – focus on increasing efficiency and problems involving whole numbers, decimals, money, measures and time eg.

£30.00 - £12.39 = £17.61

£12.39 £13.00 £20.00 £30.00
£10 + £7 + 61p = £17.61
 or
£17 + 61p = £17.61

- By the end of the year, column subtraction with exchange across tens/units columns eg.

H	T	U
	7	1
9	8	2
<u>-4</u>	<u>5</u>	<u>7</u>
5	2	5

- Be able to explain and apply

Year Six

- Columnar subtraction with exchange across all columns using numbers to 10 000 000

- Columnar subtraction with exchange across all columns including decimals

- Be able to explain and apply

DIVISION

Year One

- Using grouping (of concrete apparatus and/or jottings) to solve question such as:

I have 8 wheels, how many bikes can I make?

Give everyone 2 sweets

Make groups of 3 for PE

Halving small even numbers

- Be able to explain and apply

Year Two

- Grouping equally into 2s, 3s, 5s and 10s
 $15 \div 3 =$
- Put quantities into groups
Stress that can be organised in any order

Put 15 into groups of 3:

X X X **3**

X X X **6**

X X X **9**

X X X **12**

X X X **15**

Link to array

X X X X X

X X X X X

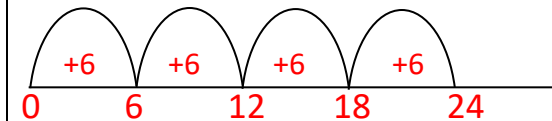
X X X X X

3 6 9 12 15

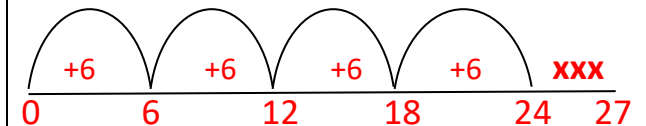
- Halving as inverse as doubling
- Be able to explain and apply

Year Three

- Grouping equally into 2s, 3s, 4s, 5s, 6s, 8s and 10s
- Informal written method using equal groups on a numberline:
Put 24 into groups of 6



- Introduce remainders
Put 27 into groups of 6
 $27 \div 6 = 4 \text{ r } 3$



- Focus on grouping rather than sharing
- Halving even numbers as inverse of doubling
- Division as the inverse of multiplication
- Be able to explain and apply

DIVISION

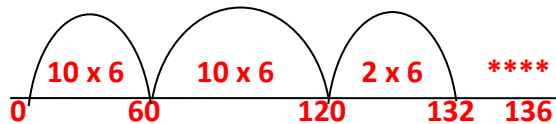
Year Four

- Grouping equally into 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s and 10s
- Division facts for multiplication tables up to 12 x 12
- Read questions as:

‘Put 136 into groups of 6’

- Extend informal written method as Yr 3 – increase efficiency by using multiples of 10 as first jump
- $TU \div U / HTU \div U$

$$136 \div 6 = 22 \text{ r } 4$$



- Be able to explain and apply

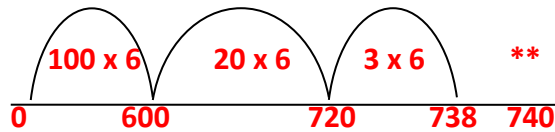
Year Five

- Extend informal written method as Yr 4 – increase efficiency by using multiples of 10 and 100
- Read questions as:

‘Put 740 into groups of 6.’

- $TU \div U / HTU \div U / ThHTU \div U$

$$740 \div 6 = 123 \text{ r } 2$$



- Use whole numbers and decimals
- Introduce compact short division

$$239 \div 8 =$$

$$8 \overline{) 239} \begin{array}{r} 29 \\ \underline{16} \\ 79 \end{array}$$

- Be able to explain and apply

Year Six

- Continue to use number line and compact short division methods as in Yr 5
- $HTU \div TU / ThHTU \div TU$
- Introduce long division

$$432 \div 15 =$$

$$\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{) 432} \\ \underline{-300} \quad (20 \times 15 = 300) \\ 132 \\ \underline{-120} \quad (8 \times 15 = 120) \\ 12 \end{array}$$

- Use whole numbers and decimals, including interpreting remainders as decimals or fractions
- Be able to explain and apply

MULTIPLICATION

Year One

- Count, use concrete apparatus, use jottings or unitise to solve questions such as:

How many wheels on 3 bikes?

Can you make a tower three times higher than this one?
- Count in 10s to 100
- Count in 2s to 20
- Double numbers to 5, then 10
- Use coins to count in 2s, 5s and 10s
- Be able to explain and apply

Year Two

- Count on in steps of 2, 3, 5 and 10
- Quick recall of multiplication facts for 2x, 5x and 10x tables and use this to work out division questions
How many groups of 2 in 20?
- Use a numbertrack, numberline or hundred square as support
- Repeated addition
 $5 + 5 + 5 + 5 = 20$
- Make arrays to show multiplication as equal groups
 $3 \times 5 = 15$ or $5 \times 3 = 15$
x x x x x x x x
x x x x x x x x
x x x x x x x x
 x x x
 x x x
- Use x and =
- Doubling to 10 and beyond
- Be able to explain and apply

Year Three

- Count on in steps of 50 and 100
- Quick recall of multiplication facts for 2x, 3x, 4x, 5x, 6x, 8x and 10x tables
- Single digit x1, x10, x100
- Doubling all numbers to 20
- Related facts eg. $7 \times 5 = 5 \times 7$
- Division facts
 $7 \times 5 = 35$
 $5 \times 7 = 35$
 $35 \div 7 = 5$
 $35 \div 5 = 7$
- Use grid method TU x U
 $14 \times 8 = 112$

X	10	4
8	80	32

 $80 + 32 = 112$
- Be able to explain and apply

MULTIPLICATION

Year Four

- Quick recall of multiplication facts up to 12 x 12
- Continue to use grid method as numbers become more complex
- HTU x U / ThHTU

147×4

X	100	40	7
4	400	160	28

$400 + 100 + 60 + 28 = 588$

or

$560 + 28 = 588$

- Be able to explain and apply

Year Five

- Use of grid method for all long multiplication questions
- HTU x TU
- ThHTU x TU
- 2dp x U eg. as in money

$£3.86 \times 7 =$

X	£3	80p	6p
7	£21	560p (£5.60)	42p

$£21 + £5 = £26$

$60p + 42p = £1.02$

$£26 + £1.02 = £27.02$

- If decimals are not in context of money, multiply as whole numbers and use approximation to establish place value in answer :
 $5.07m \times 8$ calculate as
 $507 \times 8 = 4056$
- Be able to explain and apply

Year Six

- Children continue to use the grid method as **PREFERRED WRITTEN METHOD FOR MULTIPLICATION**

- Introduce short compact multiplication
 625×6

$$\begin{array}{r} 625 \\ \times 6 \\ \hline 3750 \\ 13 \end{array}$$

- Introduce long multiplication **ONLY AT TEACHER DISCRETION FOR INDIVIDUAL CHILDREN**

$$\begin{array}{r} 234 \\ \times 24 \\ \hline 936 \\ + 4680 \\ \hline 5616 \end{array}$$

- Be able to explain and apply

FRACTIONS

Year Four

- Count up and down in 1/10s and 1/100s
- Divide quantities into ten/a hundred equal parts
- Use a bar model to find fractions of a set of objects/quantity

$1/5 \text{ of } 10 = 2$

10									
2	2	2	2	2	2	2	2	2	2
**	**	**	**	**	**	**	**	**	**

- Find equivalent fractions using a bar model

$4/10 \text{ of } 10 = 4$

$2/5 \text{ of } 10 = 4$

10									
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
**	**	**	**	**	**	**	**	**	**

- Add/subtract fractions with the same denominator

Year Five

- Compare and order fractions with the same denominator
- Recognise and use mixed numbers and improper fractions and convert them to use

$2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$

- Add/subtract fractions with the same denominator
- Multiply fractions and mixed numbers by a whole number

Year Six

- Rounding to 3 decimal places
- Comparing and ordering numbers to three decimal places
- Compare and order fractions with same and mixed denominator
- Add/subtract fractions with different denominators by converting to make them the same, using the concept of equivalent fractions
- Multiply pairs of fractions
 - $1/4 \times 1/2 = 1/8$
- Divide fractions by whole numbers
 - $1/3 \div 2 = 1/6$