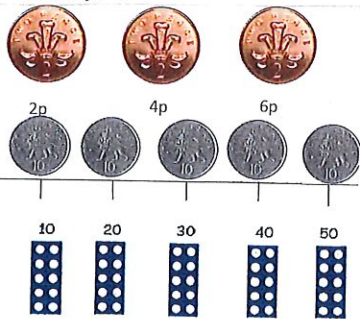


Calculation Progression at Wootton Community Primary School



Addition	Subtraction	Multiplication	Division
Count forwards – orally, using objects and concrete resources	Count backwards – orally, using objects and concrete resources	Double - using objects and concrete resources	Halve - using objects and concrete resources
<i>Subitising – recognising small amounts without counting</i> <i>Conservation – same quantity in different arrangements</i>			Share objects practically
1 more Objects, number lines	1 less Objects, number lines	Count in multiples of 2, 5 and 10 -from 0 / from any number Number lines, coins, concrete resources	
Combine groups of objects – count all	Remove objects – count remainder	Recall and use x and ÷ facts - <i>associativity</i> - Apply to missing number problems - Pictorial rep. alongside concrete resources	
Count on Numbered number line	Cross-out / count back Numbered number line	Repeated addition – multi-representations	Divide by sharing / grouping - multi-representations
Relationships / inverse: illustrate using Bar model / Part/part/whole model Use to solve missing number problems		Arrays and multiples - labelled arrays	Arrays - labelled arrays
Count across 100 and count in tens forwards and backwards – number line, concrete resources <i>Unitising – moving away from counting in ones</i>		Apply to fractions: $1 \div 10 = 1/10$. $1 \div 100 = 1/100$. Count in 1/10s and 1/100s on a number line alongside concrete resources	
Use known number facts: <i>commutativity</i> - calculate and derive related facts - If ... $7 + 3 = 10$... $17 + 3 = 10$... $70 + 30 = 100$ - If ... $10 - 6 = 4$... $20 - 6 = 14$... $100 - 60 = 40$ Tens frames / Numicon / Deines / Number line		Mental jottings using known facts: <i>commutativity</i> - E.g. $6 \times 18 \rightarrow 6 \times 10$ and 6×8 - E.g. $98 \div 7 \rightarrow 70 \div 7$ and $28 \div 7$ - Scaling: <i>n</i> times bigger / smaller Tens frames / Numicon / Deines / Number line	
Partition numbers in different ways E.g. $43 = 40 + 3 = 30 + 13 = 20 + 23 = 10 + 33 = 0 + 43$ Tens frames / Numicon / Deines / Number line		Grid method linking to arrays alongside concrete resources	Chunking linking to arrays alongside concrete resources
Bridging to tens $7 + _ = 10?$ $87 + _ = 90?$ $27 + _ = 40?$ Numbered, unnumbered with division and blank number lines alongside concrete resources - labelled		Long multiplication Formal column method alongside concrete resources	Long division Formal column method alongside concrete resources
Bridging through tens $7 + 5 = 7 + (3 + 2)$ $37 + 8 = 37 + (3 + 4)$ Numbered, unnumbered with division and blank number lines alongside concrete resources - labelled		Short multiplication Formal written method alongside concrete resources	Short division Formal written method alongside concrete resources
Find the difference, count up to subtract - How many more...? Number line alongside concrete resources		Apply to decimals - understanding of exchange / regroup where $0.1 \times 10 = 1$ and $0.01 \times 10 = 0.1$	
Place Value partitioning – one number only $27 + 25 = 27 + 20 + 5$ / $87 - 49 = 87 - 40 - 9$ Number line alongside concrete resources		Apply to Factors and Primes - arrays - factor pairs and common factors	
Formal column method – alongside concrete resources		Apply to Square and Cube numbers - arrays	
Carrying - understanding value of carried digit	Exchanging, including exchange of value across 0	Apply to Ratio and Proportion - scaling	
Apply to decimals – column method alongside concrete resources			
Select mental or written method Estimate answers <i>without calculating</i>			

Count in ...



Jack's beanstalk doubled in height overnight → how tall now?

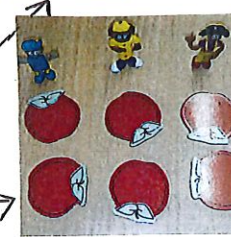
Halve objects



resources



Share objects practically



Multiplication

Double -

use objects and concrete resources

Division

Halve -

use objects and concrete resources

Share objects practically

Count in multiples of 2, 5 and 10

- from 0 / from any number

Number lines, coins, concrete resources

Recall and use \times and \div facts

- Apply to missing number problems
- Language of groups, lots of, share
- Pictorial rep. alongside concrete resources

Commutativity and associativity

Repeated addition - multi-representations

Division as sharing

Division as grouping - which is most efficient?

Arrays and multiples

- labelled arrays

Arrays

- labelled arrays

Apply to fractions:

- $1 \div 10 = 1$ tenth
- $1 \div 100 = 1$ hundredth
- 1 tenth $\div 10 = 1$ hundredth

Count in tenths and hundredths on a number line alongside practical resources

Mental jottings using known facts

- $6 \times 18 \rightarrow 6 \times 10$ and 6×8
- E.g. $98 \div 7 \rightarrow 70 \div 7$ and $28 \div 7$
- Scaling: n times bigger / smaller

Commutativity and associativity

Grid method

- linking to arrays alongside concrete resources

Chunking?

Long multiplication alongside concrete resources

Long division alongside concrete resources

Short multiplication

Short division

Apply to decimals

- understanding of exchange / regroup where $0.1 \times 10 = 1$ and $0.01 \times 10 = 0.1$

Apply to Factors and Primes

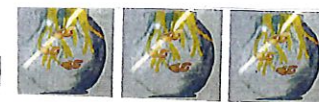
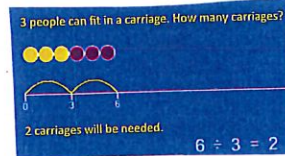
- arrays
- factor pairs
- common factors

Apply to Square and Cube numbers

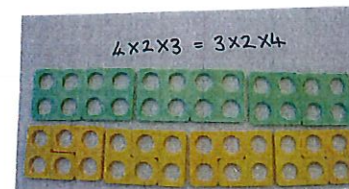
- arrays

Apply to Ratio and Proportion

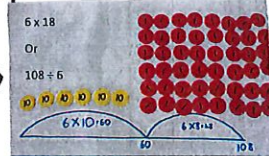
- scaling



Division as sharing and as grouping



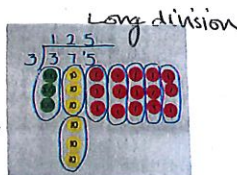
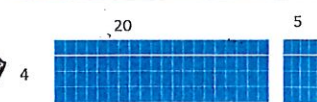
Commutativity



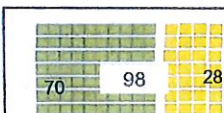
Use known facts

chunking

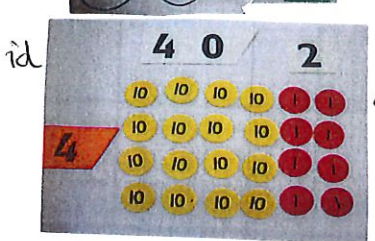
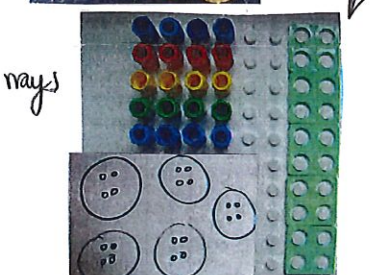
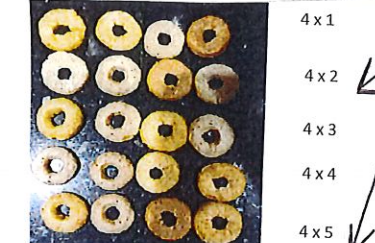
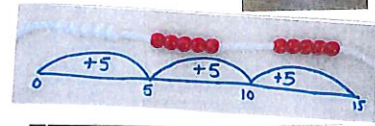
25
X 4
20 (5 x 4)
80 (20 x 4)
100



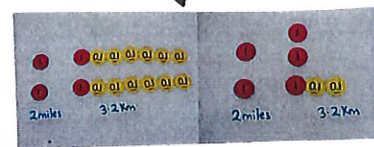
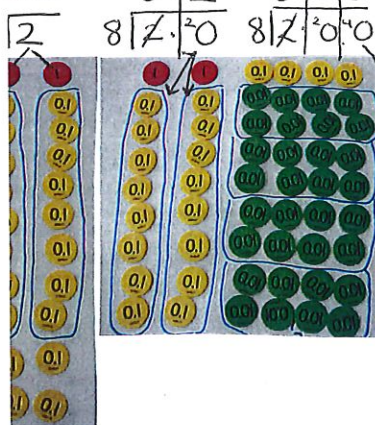
Short division



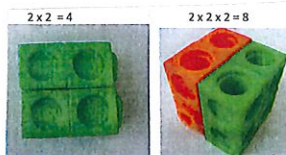
Repeated \oplus multi-rep.



decimals



Ratio
Convert m → km



Square & cube numbers

Factors of 12

→ arrange arrays

Primes → try for 13...

Count on

One, two, three

Combine groups

Number line

$3 + 2 = 5$
3 apples and 2 apples

$3 + 2 = 5$
3 apples and 2 apples, 5 apples altogether

Known facts

If ...
 $10 = 7 + 3$
 $20 = 17 + 3$
 $20 = 10 + 7 + 3$

Bridging

$48 + 23 \rightarrow 48 + 20 = 68$
 $20 \quad 3 \rightarrow 68 + 3 = 71$

Formal column

Decimals

$2.3 + 1.8 =$

Addition	Subtraction
Count forwards – orally, using objects , (recognise 1:1 correspondence)	Count backwards – orally, using objects , (recognise 1:1 correspondence)
'Subitising' – recognising small amounts without counting Conservation – same quantity in different arrangements	
1 more	1 less
Combine groups of objects – count all	Remove objects – count remainder
Numbered number line – count on – label / draw / use and label resources alongside	Numbered number line – cross-out – label / draw / use and label resources alongside
Numbered number line – count on from greatest number	Numbered number line – count back
Relationships / inverse: illustrate using Bar model / Part/part/whole model Use to solve missing number problems	
Count across 100 forwards and backwards Count in tens forwards and backwards	
Unitising – moving away from counting in ones	
Represent numbers in different way: tens/ones, number lines, resources	
Use known number facts to calculate and derive related facts – If I know... Tens frame / Numicon / Deines	
Partition numbers in different ways	
Bridging to tens Numbered to unstructured number line and concrete resources alongside - labelled	
Bridging through tens Numbered to unstructured number line and concrete resources alongside - labelled	
Find the difference count up to subtract (How many more...?)	
Place Value partitioning – one number only	
Formal column method – alongside concrete resources	
Subtract across 0 $201 - 47 =$	
Decimals – formal column method alongside concrete resources	
Select mental / written method	
Estimate answers without calculating	
Estimate Which of these will give the following approximate answer? 50	
<div> <div> <div>mental</div> <div>320 + 45</div> <div>24 + 8</div> </div> <div> <div>Formal written</div> <div>328 + 85</div> <div>356 + 185</div> </div> </div>	

Subitising

Numberline

$6 - 2 = 4$

$6 - 2 = 4$
6 apples take away 2 apples, leaves 4 apples

Known facts

If ...
 $10 - 3 = 7$
 $20 - 3 = 17$

Bridging

$38 - 17 =$

Find the difference

$56 - 28 =$

Partition

Formal column

Decimals

$2 - 0.3 = 1.7$