

Burchetts Green CE Infant School

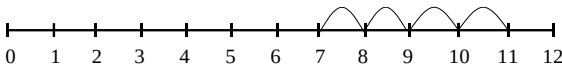
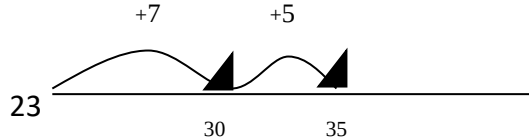
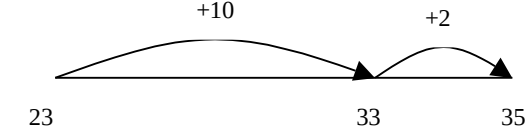
Written Calculation Policy

Pencil and paper procedures

EYFS and Key Stage 1

Written calculation objectives 2015

Addition	
Year 1	Year 2
LO - To relate addition to counting on. LO - To recognise that addition can be done in any order. LO: To use practical and informal written methods to support the addition of a one-digit number or a multiple of 10 to a one-digit or two-digit number.	LO: To use practical and informal written methods to add two-digit numbers. To develop and use written methods to record, support or explain addition of two-digit (G&T three-digit numbers).

Addition	
Year 1	Year 2
<u>Equations</u> <u>+ = signs and missing numbers</u> $3 + 4 = \square \quad \square = 3 + 4$ $3 + \square = 7 \quad 7 = \square + 4$ $\square + 4 = 7 \quad 7 = 3 + \square$ $\square + \nabla = 7 \quad 7 = \square + \nabla$ Promoting covering up of operations and numbers. <u>Process/written method</u> <u>Number lines (numbered)</u> 7 + 4  Recording by - drawing jumps on prepared lines Progress to constructing own number lines (Teacher model number lines with missing numbers)	<u>Equations</u> <u>+ = signs and missing numbers</u> Continue using a range of equations as in Year 1 but with appropriate, larger numbers. Extend to $14 + 5 = 10 + \square$ and adding three numbers $32 + \square + \square = 100 \quad 35 = 1 + \square + 5$ <u>Process/written method</u> <u>Number lines (not numbered)</u> To the nearest 10 $23 + 12$  Partitioning and jumping 10s $23 + 12$ 

(Teachers model jottings appropriate for larger numbers)

Partition into tens and units and recombine

$$\begin{array}{r} 12 + 23 = 10 + 2 \\ \quad \quad \quad 20 + 3 \\ \hline 30 + 5 = 35 \end{array}$$

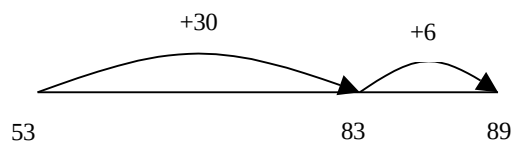
G&T Equations

+ = signs and missing numbers

Continue using a range of equations as in Year 1 and 2 but with appropriate, larger numbers.

Process/written method

Number lines (not numbered)

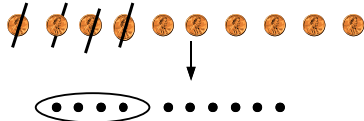
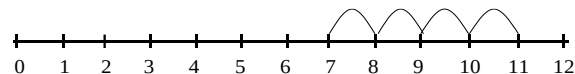
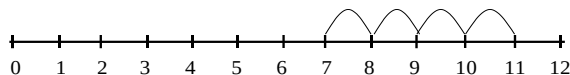


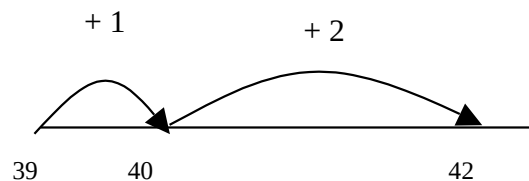
Partition into tens and units and recombine

$$\begin{array}{r} 83 + 42 = 80 + 3 \\ \quad \quad \quad 40 + 2 \\ \hline 120 + 5 = 125 \end{array}$$

Written calculation objectives 2015

Subtraction	
Year 1	Year 2
LO: To use practical and informal written methods to subtract two-digit numbers (<i>not in Renewed Framework</i>).	LO: To use practical and informal written methods to subtract two-digit numbers. LO: Understand that subtraction is the inverse of addition and vice versa. To develop and use written methods to record, support subtraction of two-digit (G&T three-digit numbers).

Subtraction	
Year 1	Year 2
<u>Pictures / marks</u> Sam spent 4p. What was his change from 10p?  <u>Equations</u> <u>- = signs and missing numbers</u> $7 - 3 = \square \quad \square = 7 - 3$ $7 - \square = 4 \quad 4 = \square - 3$ $\square - 3 = 4 \quad 4 = 7 - \square$ $\square - \nabla = 4 \quad 4 = \square - \nabla$ <u>Process/written method</u> <u>Number lines (numbered)</u> The difference between 7 and 11 (Counting up)  Recording by - drawing jumps on prepared lines - constructing own lines (Teachers model jottings appropriate for larger numbers)	<u>- = signs and missing numbers</u> Continue using a range of equations as in Year 1 but with appropriate numbers. Extend to $14 + 5 = 20 - \square$ <u>Process/written method</u> <u>Number lines (numbered)</u> The difference between 7 and 11 (Counting up)  Recording by - drawing jumps on prepared lines <u>Number lines (blank)</u> <u>Complementary addition</u> Find a small difference by counting up $42 - 39 = 3$



G&T Equations

- = signs and missing numbers

Continue using a range of equations as in Year 1 and 2 but with appropriate numbers.

Process/written method

Find a small difference by counting up

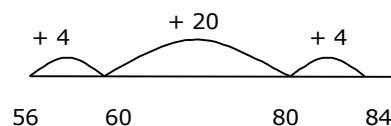
Continue as in Year 2 but with appropriate numbers

e.g. $102 - 97 = 5$

Number lines (blank)

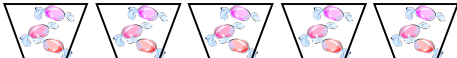
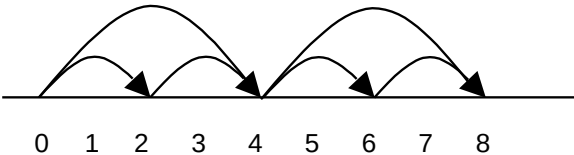
Complementary addition

Find the **difference** by counting up. Continue as in Year 2 but with appropriate numbers with larger differences, e.g. $84 - 56 = 28$ (*bridging to the nearest multiple of 10*).



Written calculation objectives 2015

Multiplication	
Year 1	Year 2
LO: To use practical and informal written methods to multiply two-digit numbers (<i>not in Renewed Framework</i>).	LO: To represent repeated addition as multiplication. LO: To represent arrays as multiplication. LO: To use practical and informal written methods to support multiplication, including calculations with remainders. LO: To use practical and informal written methods to multiply two-digit numbers (e.g. 13×3).

Multiplication	
Year 1	Year 2
<u>Process/written method</u> <u>Pictures and symbols</u> <u>Grouping</u> There are 3 sweets in one bag. How many sweets are there in 5 bags?  <i>(Recording on a number line modelled by the teacher when solving problems)</i>	<u>Equations</u> <u>x = signs and missing numbers</u> $7 \times 2 = \square \qquad \square = 2 \times 7$ $7 \times \square = 14 \qquad 14 = \square \times 7$ $\square \times 2 = 14 \qquad 14 = 2 \times \square$ $\square \times \nabla = 14 \qquad 14 = \square \times \nabla$ <u>Process/written method</u> <u>Arrays and repeated addition</u> $\begin{array}{cccc} \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \end{array} \quad 4 \times 2 \text{ or } 4 + 4$ 2×4 <u>or repeated addition on a number line</u> $2 + 2 + 2 + 2$  <u>Partition (need to be able to partition to use grid method)</u> $15 \times 2 = 10 \times 2 = 20$ $5 \times 2 = 10$ $20 + 10 = 30$

[Grid method \(more able\)](#)

x	10	5
2	20	10

G&T Equations

[x = signs and missing numbers](#)

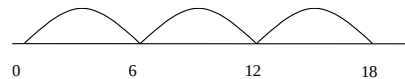
Continue using a range of equations as in Year 2 but with appropriate numbers.

Process/written method

[Arrays and repeated addition](#)

Continue to understand multiplication as repeated addition and continue to use arrays and number line (as in Year 2).

6×3



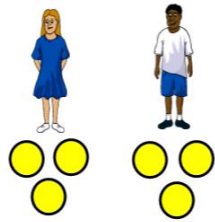
[Progress from partitioning in Year 2 to the grid method](#)

x	30	5
2	60	10

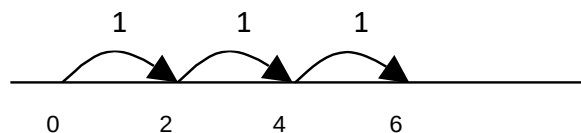
	Use the same method as above (partitioning), e.g. $32 \times 3 = 96$ $\begin{array}{r rr} \times & 30 & 2 \\ 3 & 90 & 6 \end{array}$
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Written calculation objectives 2015

Division		
Year 1	Year 2	
LO: To use practical and informal written methods to divide two-digit numbers (<i>not in Renewed Framework</i>).	LO: To represent sharing and repeated subtraction (grouping) as division. LO: To use practical and informal written methods and related vocabulary to support division, including calculations with remainders. LO: To use practical and informal written methods to divide two-digit numbers (e.g. $50 \div 4$).	

Division	
Year 1	Year 2
<u>Process/written method</u> <u>Pictures / marks</u> <u>Grouping</u> 12 children get into teams of 4 to play a game. How many teams are there? 	<u>Equations</u> <u>$\div$ = signs and missing numbers</u> $6 \div 2 = \square \qquad \square = 6 \div 2$ $6 \div \square = 3 \qquad 3 = 6 \div \square$ $\square \div 2 = 3 \qquad 3 = \square \div 2$ $\square \div \nabla = 3 \qquad 3 = \square \div \nabla$ <u>Process/written method</u> <u>Understand division as sharing and grouping</u> Sharing – 6 sweets are shared between 2 people. How many do they have each?  $6 \div 2$ can be modelled as: Grouping – There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)

Number line



Equations

$\div$ = signs and missing numbers

More able continue using a range of equations as in Year 2 but with appropriate numbers.

Process/written method

Understand division as sharing and grouping

$18 \div 3$ can be modelled as:

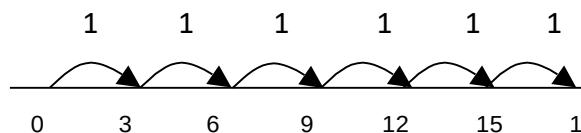
Sharing – 18 shared between 3 (see Year 2 diagram)

OR

Grouping - How many 3's make 18?

Number line

$$18 \div 3 = 6$$



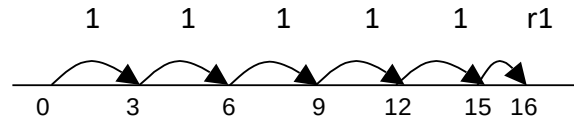
Remainders

$$16 \div 3 = 5 \text{ r}1$$

Sharing - 16 shared between 3, how many left over?

Grouping – How many 3's make 16, how many left over?

e.g.



Policy Review

This policy was last reviewed on 27th June 2018 and will be reviewed every three years by the Education Committee, or more frequently in light of changes in legislation or following recommendation by the headteacher or subject leader, or other appropriate authorities.

This policy was approved by the Education Committee on 16th June 2021