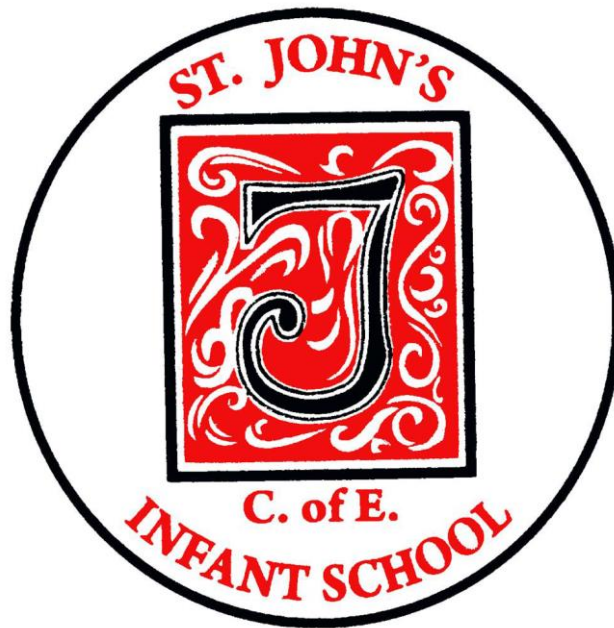


CALCULATION METHODS POLICY

St John's Church of England Infant
School



Date approved	Sept 2025
Review date	Sept 2026



Addition

Year 1

+ = signs and missing numbers

$$3 + 4 = \square \quad \square = 3 + 4$$

$$3 + \square = 7 \quad 7 = \square + 4$$

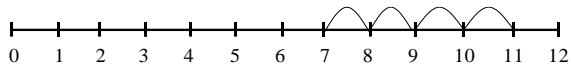
$$\square + 4 = 7 \quad 7 = 3 + \square$$

$$\square + \nabla = 7 \quad 7 = \square + \nabla$$

Promoting covering up of operations and numbers.

Number lines (numbered)

$$7 + 4$$



Recording by - drawing jumps on prepared lines

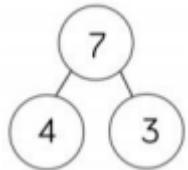
- constructing own lines

(Teachers model number lines with missing numbers)

(Teachers model jottings appropriate for larger numbers)

Part whole model

Combining two parts to make a whole: part whole model – this supports the children in their understanding of aggregation and partitioning.



Year 2

+ = signs and missing numbers

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

$$32 + \square + \square = 100 \quad 35 = 1 + \square + 5$$

Partition into tens and ones and recombine

$$12 + 23 = 10 + 2 + 20 + 3$$

$$= 30 + 5$$

$$= 35$$

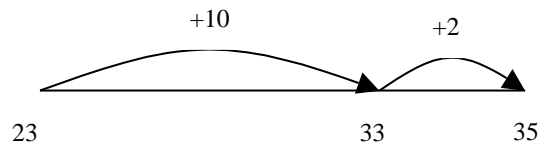
refine to partitioning the second number only:

$$23 + 12 = 23 + 10 + 2$$

$$= 33 + 2$$

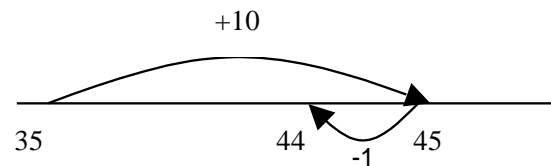
$$= 35$$

Number lines



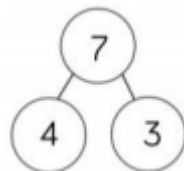
Add 9 or 11 by adding 10 and adjusting by 1

$$35 + 9 = 44$$



Part whole model

Combining two parts to make a whole: part whole model – this supports the children in their understanding of aggregation and partitioning.

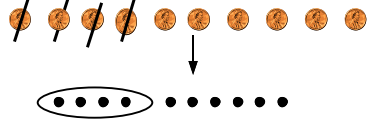


Subtraction

Year 1

Pictures / marks

Sam spent 4p. What was his change from 10p?



- = signs and missing numbers

$$7 - 3 = \square \quad \square = 7 - 3$$

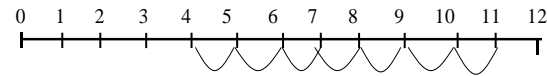
$$7 - \square = 4 \quad 4 = \square - 3$$

$$\square - 3 = 4 \quad 4 = 7 - \square$$

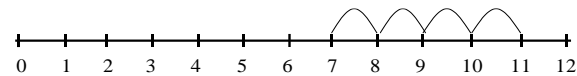
$$\square - \nabla = 4 \quad 4 = \square - \nabla$$

Number lines (numbered)

11 - 7
(Counting back)



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)

Year 2

- = signs and missing numbers

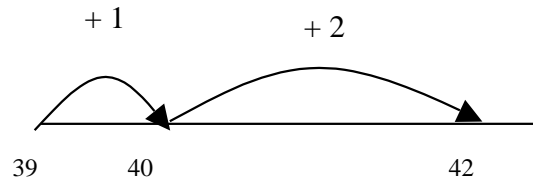
Continue using a range of equations as in Year 1 but with appropriate numbers.

Extend to $14 + 5 = 20 - \square$

Find a small difference by counting up

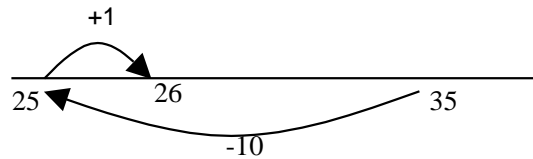
Number lines

$$42 - 39 = 3$$



Subtract 9 or 11. Begin to add/subtract 19 or 21

$$35 - 9 = 26$$



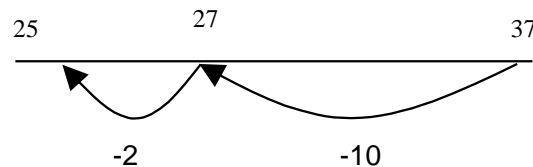
Use known number facts and place value to subtract

(partition second number only)

$$37 - 12 = 37 - 10 - 2$$

$$= 27 - 2$$

$$= 25$$



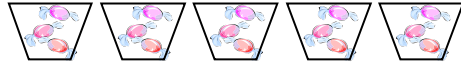
Multiplication

Year 1

Pictures and symbols

There are 3 sweets in one bag.
How many sweets are there in 5 bags?

Calculation is presented in pictorial form:



Use of bead strings and apparatus to model 'groups of.'

$$3 \times 5 =$$



Number lines

$$3 \times 3 = \text{'3 jumps of 3'} = 9$$



0 1 2 3 4 5 6 7 8 9 10 12 13 14

Pencil and paper procedures

Children draw arrays :

$$3 \times 4 = \text{'3 rows of 4'} = \begin{array}{cccc} \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \end{array} = 12$$

Multiplication tables

By the end of year 1 children should be able to count reliably forwards and backwards in **2s**, **5s** and **10s**.

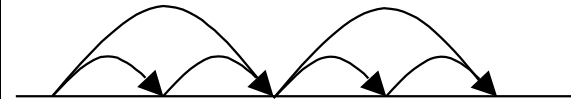
Year 2

x = signs and missing numbers

$$\begin{array}{ll} 7 \times 2 = \square & \square = 2 \times 7 \\ 7 \times \square = 14 & 14 = \square \times 7 \\ \square \times 2 = 14 & 14 = 2 \times \square \\ \square \times \nabla = 14 & 14 = \square \times \nabla \end{array}$$

Number lines

Number lines should be used to show multiplication as being reversible eg; '4 lots of 2' is the same as '2 lots of 4'



0 1 2 3 5 6 7

Doubling multiples of 2, 5 and 10 up to 50

Children should understand doubling as being the same as 'multiplying by 2'

$$\text{Double } 15 = 15 \times 2 \text{ or } 2 \times 15 = 30$$

Partitioning

Partitioning should also be taught through doubling and modelled by the teacher like so:

$$15 \times 2 = (2 \times 10 = 20)$$

$$(2 \times 5 = 10)$$

Year 2 addition methods should then be used to find the answer of 30.

Pencil and paper procedures

Children draw arrays as in year 1, then extend to recording calculation as repeated addition.

$$3 \times 4 = 4 + 4 + 4 = 12$$

Multiplication tables

By the end of year two children should be able to count reliably forwards and backwards in multiples of **3 as well as those expected by the end of year one**.

Children should also be starting to recall these facts when needed with increasing speed and accuracy.

Division

Year 1

Pictures / marks

12 children get into teams of 4 to play a game.
How many teams are there?

Calculation is presented in pictorial form by teacher :



Use of apparatus is modelled by teacher to demonstrate sharing process

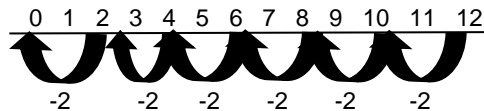
e.g 12 sticks 'shared between' 3 hoops = 4 sticks in each



Number lines

Teacher demonstrates showing division as repeated subtraction

12 shared between 2 = 'how many equal jumps of 2 can we get out of 12?' = 6



Year 2

÷ = signs and missing numbers

$$6 \div 2 = \square \quad \square = 6 \div 2$$

$$6 \div \square = 3 \quad 3 = 6 \div \square$$

$$\square \div 2 = 3 \quad 3 = \square \div 2$$

$$\square \div \nabla = 3 \quad 3 = \square \div \nabla$$

Children produce their own pictorial representations for division problems and demonstrate their own understanding of the calculation process through use of practical apparatus

See those modelled by the teacher in Y1.

Understand division as sharing (and) grouping

Children should be introduced to the concept that multiplication facts can be used to help solve division problems.

The sharing approach: $6 \div 2 =$

6 sweets are shared between 2 people. How many do they have each?



The grouping approach: $6 \div 2 =$

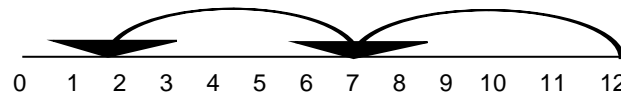
There are 6 sweets. How many people can have a group of 2 sweets each? (How many groups of 2 make 6?)



Number lines

Children use / draw number lines themselves to show division as repeated subtraction. **The idea of remainders is introduced**

e.g. $12 \div 5 = 2$ equal sets of 5 and 2 left over



Pencil and paper procedures

Children represent division by creating markings and sharing into equal groups.

e.g. $13 \div 3 =$ '13 shared into equal sets of 3' = 4 with 1 left over

