

Kirklevington Primary School EYFS Calculation Policy

This policy supports the White Rose Schemes of Learning from Reception to Year 6. Each area of study progresses in line with the National Curriculum (2014) and the EYFS Framework (2021).



The calculation policy should be used in school, and at home, to support children in developing a deep understanding of number and calculation to gain mastery mathematics knowledge so they know more, remember more and can do more.

Concrete, Pictorial, Abstract (CPA) Approach


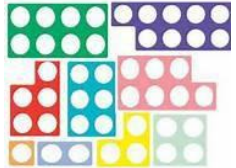
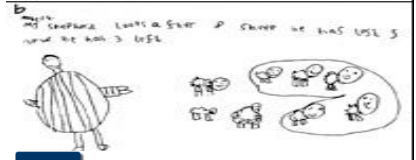
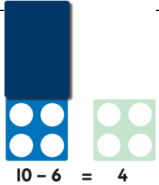



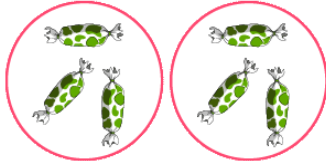
Children of all ages are first introduced to new mathematical learning using real objects (concrete resources). They are offered a 'hands on' experience with manipulatives to support their fundamental knowledge as a foundation for their conceptual understanding. This is then followed by a pictorial representation which reflects the concrete manipulatives previously used. The children then make connections between the concrete resources and then the pictorial representations. After sufficient foundation knowledge is gained, the pupils move on to an abstract representation using mathematical notations. To begin with, this concept is used parallel with the pictorial and concrete representations to secure the children's knowledge of all procedures.

These skills are reinforced through all representations being used throughout school, irrespective of the year group.

Reasoning and Problem Solving


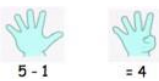


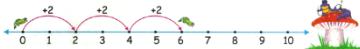
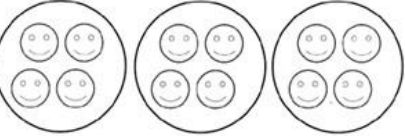
Each lesson, the children are exposed to reasoning and problem solving questions to embed their understanding of the skills gained within the lesson. They used their learning in real-life contexts to solve complex and abstract problems, considering the skills gained in previous areas of learning.

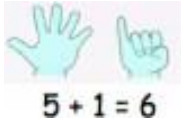
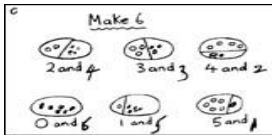
Children are encouraged to develop a mental picture of the calculation to support their understanding.

Nursery	Addition	Subtraction	Multiplication	Division
<p>Acorn</p>	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - $O + O$ - combining objects - 1 more than a given number - $O + O$ - counting on from a given number - Subitise to 5 - React to changes in an amount up to 3 items - adding items - Understand when two groups are the same - Solve real world mathematical problems up to 5 - Be able to express how any there are in total through knowing that the last number counted is the total 'cardinal principal' - Use key vocabulary when explaining reasoning 'I think it is larger because...' 'I think they have more because...' <p>Children develop ways of recording calculations using Numicon, bead strings, counters, pictures, marks etc.</p>  <p>$5 + 1 = 6$</p> <p>Children experiment with combining different numicon tiles together to find a total or match another piece</p> 	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - $O - O$ (take away) - 1 less than a given number up to 5 - $O - O$ comparison e.g. 'how many more...' 'how many less...' - React to changes in an amount up to 3 items - taking away items - Join in with songs and nursery rhymes involving hiding and returning - Solve real world problems up to 5 - Use key vocabulary when explaining reasoning e.g. 'this person has fewer because...' <p>Children develop ways of recording calculations using Numicon, bead strings, counters, pictures, marks etc.</p>   <p>$10 - 6 = 4$</p> <p>Children use number lines, tracks and numicon shapes to find one less and to support with counting back. Teachers demonstrate the use of a number line.</p> <p>Children use objects and numicon to help them compare objects and to say how many more or less.</p>	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - Experiment with numbers up to 10, looking at equal groups supported by the teacher. <p>Children will experience equal groups of objects using counting equipment - Numicon, Cuisenaire etc.</p>   <p>Children use songs, games and real life contexts to count in repeated groups of the same size (2s and 10s)</p> <p>Children use number lines to begin counting in groups.</p> 	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - Begin to share and understand the basic concept 'one for me and one for you'. <p>Children will understand equal groups and share items out in play and problem solving.</p>  <p>Explore sharing into equal groups and sets with counting equipment e.g. Numicon and Cuisenaire.</p>

Key Vocabulary for the Four Operations	add, more, and, +. total, make, sum, lots, same, larger, smaller, altogether	take away, less, -, left over, fewer, difference between, equal to, equals	same, number patterns	share, number patterns
Resources	Numicon, counting equipment, loose parts, number line	Counting equipment, loose parts, number line	Sorting resources	Sorting resources

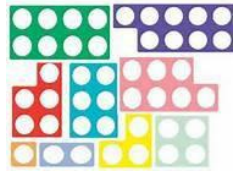
Children are encouraged to develop a mental picture of the calculation to support their understanding.

Reception	Addition	Subtraction	Multiplication	Division																														
<p>Willow</p>	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - Understanding of the Cardinal Principal - the final number counted is the total - Subitise and then use counting to check (up to 10) - $O + O$ - combining objects - 1 more than a given number up to 20 - $O + O$ - counting on from a given number - Compare numbers using language such as 'more than' and 'greater than' and have a good understanding of 'one more than' - Understand the composition of numbers to 10 - Begin with numbers to 5 and understand the number bonds using a range of resources and physical objects, encouraging subitising - Move on to larger numbers as children develop a secure understanding - Be able to recall number bonds to 10 - Use opportunities to encourage children to recall number bonds e.g. 'there are 3 children on the carpet and 3 children at the table. There are 6 children' - Solve problems using concrete resources and pictorial images <p>Children develop ways of recording calculations using numicon, bead strings, counters, part whole models, marks etc.</p>	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - $O - O$ (take away) - 1 less than a given number up to 20 - $O - O$ - comparison e.g. 'how many more', 'how many less' - Compare numbers using language such as 'less than' and 'fewer than' and have a good understanding of 'one less than' - Understanding of numbers to 10 and link this knowledge to subtraction - Begin with numbers to 5 and understand number bonds using a range of resources and physical objects - Encourage subitising - move on to larger groups as children develop a secure understanding - Be able to recall number bonds to 10 - Use opportunities to encourage children to recall number bonds e.g. 'there were 5 children on the carpet and 2 have gone to play. Now there are 3 children' <p>Use touch counting to understand the concept of subtraction, encouraging the children to physically take resources away.</p>  <p>Children develop ways of recording calculations using Numicon, bead strings, counters, part whole models, marks, ten frames etc.</p> 	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - Counting in 2s and 10s - Beginning to double single-digit numbers - Become exposed to language such as 'double' and 'half' and see this using concrete resources <p>Children will experience equal groups of objects, using counting equipment, Numicon and Cuisenaire etc.</p>  <p>Children begin recording doubles.</p>  <p>Children use songs, games, real life contexts to count in repeated groups of 2s and 10s.</p> <p>Children use number squares and tracks to begin counting in groups.</p> <table border="1" data-bbox="1265 1292 1635 1396"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table> 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	<p><u>Progression of Calculation</u></p> <ul style="list-style-type: none"> - Creating equal groups of set objects - Sharing a set of objects - Become exposed to language such as 'double' and 'half' and see this using concrete resources <p>Children will understand equal groups and share items out in play and problem solving.</p>  <p>Explore sharing into equal groups and sets with counting equipment, Numicon, Cuisenaire etc.</p>
1	2	3	4	5	6	7	8	9	10																									
11	12	13	14	15	16	17	18	19	20																									
21	22	23	24	25	26	27	28	29	30																									

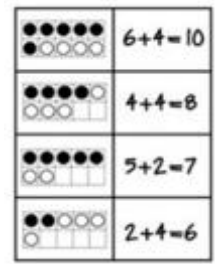


$$5 + 1 = 6$$

Children experiment with combining different numicon tiles together to find a total or match another piece.



Use tens frames to support addition of single digits by combining two groups.



$$8 - 4 = \underline{\quad}$$



Children use number lines, tracks and Numicon shapes to find one less and to support with counting back. Teachers demonstrate the use of a number line.

Key Vocabulary for the Four Operations

add, more, and, +, total, make, sum, lots, same, larger, smaller, altogether, sum sequence

Resources

Numicon, counting equipment, loose parts, number line, bead strings

take away, less, -, left over, fewer, difference between, equal to, equals

Counting equipment, loose parts, number line

same, number patterns, double

Sorting resources, counters, double bags, number squares, number lines

share, number patterns, half

Sorting resources, halving mats

Key Mathematical Vocabulary for EYFS

Number

zero
number
one, two, three ... to twenty and beyond
teens numbers, eleven, twelve ... twenty
none
how many ...?
count, count (up) to, count on (from, to),
count back (from, to)
count in ones, twos, fives, tens
is the same as
more, less
odd, even
few
pattern
pair

Estimating

guess
how many ...?
estimate
nearly
close to
about the same as
just over, just under
too many, too few
enough, not enough

Place value

ones
tens
digit
the same number as, as many as
more, larger, bigger, greater
fewer, smaller, less
fewest, smallest, least
most, biggest, largest, greatest
one more, ten more
one less, ten less
compare
order
size
first, second, third... twentieth
last, last but one
before, after
next
between

MEASUREMENT

measure
size
compare
guess, estimate
enough, not enough
too much, too little
too many, too few
nearly, close to, about the same as
just over, just under

Weight

weigh, weighs, balances
heavy, light
heavier than, lighter than
heaviest, lightest
scales

Time

time
days of the week, Monday, Tuesday ...
day, week
birthday, holiday
morning, afternoon, evening, night
bedtime, dinner time, playtime
today, yesterday, tomorrow
before, after
next, last
now, soon, early, late
quick, quicker, quickest, quickly
slow, slower, slowest, slowly
old, older, oldest
new, newer, newest
takes longer, takes less time
hour, o'clock
clock, watch, hands

Length

metre
length, height, width, depth
long, short, tall
high, low
wide, narrow
thick, thin
longer, shorter, taller, higher ... and so on
longest, shortest, tallest, highest ... and so on
far, near, close

Capacity and volume

full
empty
half full
holds
container

Money

money
coin
penny, pence, pound
price, cost
buy, sell
spend, spent
pay

GEOMETRY

Properties of shape

shape, pattern

flat

curved, straight

round

hollow, solid

sort

make, build, draw

size

bigger, larger, smaller

symmetrical

pattern, repeating pattern

match

across

next to, close, near, far

along

through

to, from, towards, away from

movement

slide

roll

turn

stretch, bend

whole turn, half turn

2-D shape

corner, side

rectangle (including square)

circle

triangle

3-D shape

face, edge, vertex, vertices

cube

pyramid

sphere

cone

STATISTICS

count, sort

group, set

list

Position and direction

position

over, under

above, below

top, bottom, side

on, in

outside, inside

around

in front, behind

front, back

beside, next to

opposite

apart

between

middle, edge

corner

direction

left, right

up, down

forwards, backwards, sideways

GENERAL

pattern

puzzle

what could we try next?

how did you work it out?

recognise

describe

draw

compare

sort