

Bishop King Early Years Calculation Policy

Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measures (Statutory Framework for the Early Years Foundation Stage, DfE: 2012).

Concrete

Concrete is the “doing” stage, using concrete objects to model problems.

Pictorial

Pictorial is the “seeing” stage, using representations of the objects to model problems.

Abstract

Abstract is the “symbolic” stage, where children are able to use abstract symbols to model problems.

This approach develops children’s understanding at a deeper level and helps children learn new ideas and build on their existing knowledge by introducing abstract concepts in a more familiar and tangible way.

We use the White Rose Maths alongside the Development Matters in the Early Years Foundation Stage (EYFS) to plan our maths lessons. By the end of the reception year children are expected to reach the Early Learning Goal (ELG) outlined below:

Early Learning Goal for Number:

- Children can count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number.
- Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
- They solve problems, including doubling, halving and sharing.

Children must be exposed to different representations of mathematical concepts in order to embed conceptual understanding. One of the aims under the Characteristics of Effective Learning is ‘creating and thinking critically.’ Children are encouraged to make links, find new ways to do things, solve problems, change strategies as needed, make predictions and develop ideas of grouping, sequencing, cause and effect. Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.

Addition

Nursery focus on: Counting songs, counting rhymes, counting real objects, counting people, how many altogether, counting then saying the total, counting 1:1 correspondence, real life adding eg apples at snack time, milk, girls and boys.

GUIDANCE/MODELS AND IMAGES

Children begin to combine groups of objects or pictures using concrete apparatus.

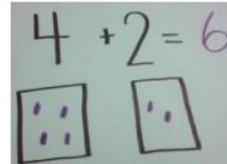


Solve simple problems using fingers.



Construct number sentences verbally or using cards to go with practical activities.

Children are encouraged to read number sentences aloud in different ways e.g. "Three add two equals 5" "5 is equal to three and two."



Count on to find the answer.

Have an understanding of what "more" means and be able to say what is one more than a given number.



Number tracks can be introduced to count up on and to find one more.

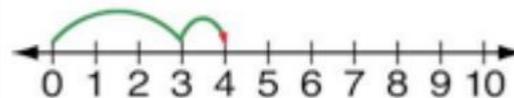
Children make a record in pictures, words or symbols of addition activities.



When appropriate, numicon shapes are introduced to identify 1 more/less, combine pieces to add and find number bonds.

$$3 + 1 = 4$$

Number lines can be used alongside number tracks and practical apparatus to solve addition calculations and word problems.



Vocabulary:

Games and songs to begin using vocabulary involving addition.

Add, more, and, make, total, altogether, double, one more, two more, how many more.

Subtraction

Nursery focus on: Counting songs, counting rhymes, counting real objects, using language associated with less, counting people, counting 1:1 correspondence, real life subtraction eg apples at snack time, milk, girls and boys, take away, identifying when totals are the same.

GUIDANCE/MODELS AND IMAGES

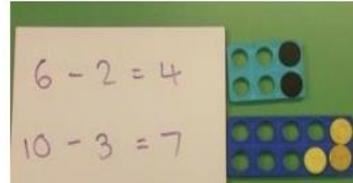
Concrete apparatus is used to relate subtraction to taking away and counting how many objects are left.



Solve simple problems using fingers.



Construct number sentences verbally or using cards to go with practical activities.



Children are encouraged to read sentences aloud in different ways “five subtract one leaves four” “four is equal to five subtract one.”

Count back to find the answer.



Have an understanding of what “less” means and be able to say what is one less than a given number. What is 1 less than 9? 1 less than 20?

Number tracks can be introduced to count back and to find one less.



Children make a record in pictures, words or symbols of subtraction activities.

Number lines can then be used alongside number tracks and practical apparatus to solve subtraction calculations and word problems.



Vocabulary:

Take away, leave, how many are left, how many have gone, one less, two less, is the same as.

Multiplication

Nursery focus on: counting groups of, groups of same numbers, pairs of objects, sets of objects.

GUIDANCE/MODELS AND IMAGES

The link between addition and multiplication can be introduced through doubling and reinforced through repeated addition of the same number.

Numicon is used to visualise the repeated adding of the same number.

Children begin with mostly pictorial representations e.g. How many groups of 2 are there? $2 + 2 + 2 + 2 + 2$, so 5 groups of 2.

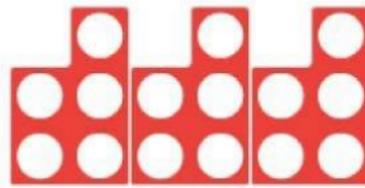
Real life contexts and use of practical equipment is used to count in repeated groups of the same size e.g. How many wheels are there altogether?

Children are encouraged to read number sentences aloud in different ways "five times two makes ten" "ten is equal to five multiplied by two" "ten is the same as five lots of two."

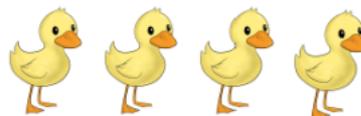
Count in twos, fives and tens both aloud and with objects.

Children are given multiplication problems set in a real life context. Children are encouraged to visualise the problem e.g. How many fingers on two hands? How many sides on three triangles? How many legs on four ducks?

$$5 + 5 + 5$$



2, 4, 6, 8, 10, 12



Vocabulary:

Lots of, groups of, double.

Division

Nursery focus on: Sharing, halving, equals

GUIDANCE/MODELS AND IMAGES

Division can be introduced through halving or sharing an equal amount into 2 groups.

Children begin with mostly pictorial representations linked to real life contexts.

Children need to see and hear representations of division as both grouping and sharing.

Grouping model:

Mum has 6 socks. She grouped them into pairs. How many pairs did she make?

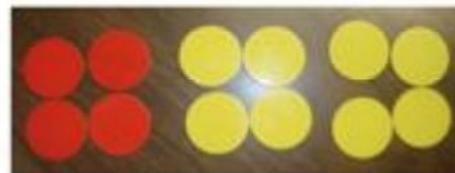
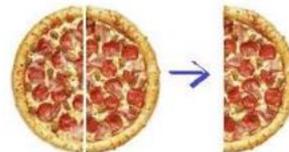
Sharing model:

I have 10 sweets. I want to share them with my friend. How many will we have each?

The sharing model is a useful way to introduce young children to fractions e.g. Can you cut the pizza in half?

Children make a record in pictures, words or symbols of division activities.

Children are encouraged to have a go at recording the calculation that has been carried out e.g. by arranging concrete objects into groups.



Vocabulary:

Half, halve, equal, groups of.