

Priestley Primary School
Early Year Foundation Stage
Calculation Policy



Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes (Statutory Framework 2021).

At Priestley Primary our approach to mathematics is based on the CPA Approach developed by American psychologist, Jerome Bruner.

<u>Concrete</u>	Concrete is the "doing" stage, using concrete objects to model problems
<u>Pictorial</u>	Pictorial is the "seeing" stage, using representations of the objects to model problems.
<u>Abstract</u>	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 Developing Matters in the Early Years Foundation Stage (EYFS) as well as White Rose to plan our maths lessons. By the end of the reception year children are expected to reach the Early Learning Goal (ELG) outlined below:

Reception and Early Learning Goals

Mathematical Vocabulary

- Learn new vocabulary
- Use new vocabulary throughout the day

- ELG - Participate in small group, class and one to one discussions, offering their own ideas, using recently introduced vocabulary

Number and Place Value

- Count objects actions and sounds
- Count beyond ten
- ELG - Verbally count beyond 20, recognising the pattern of the counting system

Identifying, representing and Estimating numbers

- Subitise
- Link the number (numeral) with its cardinal number value
- ELG- Subitise (recognise quantities without counting) up to 5.

Reading and Writing numbers

- Link the number (numeral) with its cardinal number value.

Compare and Order Numbers

- Compare numbers
- ELG- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than , less than or the same as the other quantity.

Understanding Place Value

- Understand the 'one more than / one less than' relationship between consecutive numbers
- Explore the composition of numbers to 10.
- ELG- Have a deep understanding of numbers to 10, including the composition of each number.

Addition and Subtraction

Mental Calculations

- ELG – Automatically recall number bonds to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Solve Problems

- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.

Properties of Shapes

Recognise 2D and 3D shapes and their properties

- Select, rotate, and manipulate shapes in order to develop spatial reasoning skills.

Compare and Classify Shapes

- Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.

Position and Direction

- Draw information from a simple map.
- Continue, copy and create repeating patterns.



Addition

Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.

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.

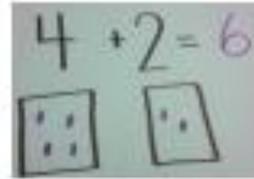
Have an understanding of what "more" means and be able to say what is one more than a given number.

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

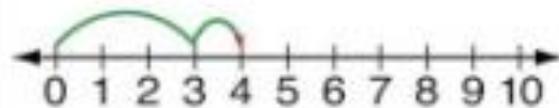
Children make a record in pictures, words or symbols of addition activities.

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

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



$$3 + 1 = 4$$



Vocabulary: Games and songs can be useful way to begin using vocabulary involved in addition. Add, more, sum, and make, total, altogether

Subtraction

Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.

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: Games and songs can be a useful way to begin using the vocabulary involved in subtraction. Take (away), leave, left/left over, less, fewer, difference

Multiplication

Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.

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?



Vocabulary: Lots of, groups of, times, repeated addition, double, combine

Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.

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:

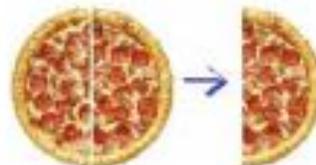
Mum has 6 socks. She grouped them into pairs. How many pairs did she make?

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, share, equal, groups of, left/left over.