

Pyrford Church of England Primary School



EYFS Squirrels and Reception Calculation Policy 2022

EYFS Prime Areas of Learning – Mathematics

Maths is one of the prime areas of learning in the Early Years. It is not, and cannot, be taught or learnt alone. In our EYFS classes, children are taught learning behaviours in all of the curriculum areas that help develop their ability to listen, focus and understand what is being taught and learnt. It is our intention that all children hear specific rich language in all curriculum areas. Through repetition and focussed teaching, our aim is that all children can articulate their thoughts and explain their reasoning and understanding.

Parental involvement in children's learning and attainment is also vital.

'There is strong evidence to suggest that supporting children's early mathematics, especially in the home, has a positive impact on long term attainment in mathematics and in other areas of learning and development.' (NCB, *Early Mathematical Development* March 2019)

Mathematics

EYFS Statutory Educational Programme:

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.



Listening, Attention and Understanding ELG

Children at the expected level of development will:

- Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions;
- Make comments about what they have heard and ask questions to clarify their understanding;
- Hold conversation when engaged in back-and-forth exchanges with their teacher and peers.

Speaking ELG

Children at the expected level of development will:

- Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary;
- Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate;
- Express their ideas and feelings about their experiences using full sentences, including use of past, present, and future tenses and making use of conjunctions, with modelling and support from their teacher.

Number ELG

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.



Cardinality and Counting

Understanding that the cardinal value of a number refers to the quantity, or 'howmany-ness' of things it represents



Comparison

Understanding that comparing numbers involves knowing which numbers are worth more or less than each other



Composition

Understanding that one number can be made up from (composed from) two or more smaller numbers

(NCETM)

Numerical Patterns ELG

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.



Pattern

Looking for and finding patterns helps children notice and understand mathematical relationships



Shape and Space

Understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking



Measures

Comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later

At Pyrford Primary School, children are encouraged to 'have a go' in order to develop a positive attitude and an interest in maths. We help them talk through their understanding, with adults and their peers, so that they are able to identify and explain what they have found and how they may be able to challenge this further: this encourages children to be unafraid of making mistakes in their learning.

Children will develop their concept of the number system through use of concrete and material representations. At Pyrford, they experience practical calculation using a wide variety of equipment for example small world play, role play, counters, cubes and investigate ways of recording calculations using pictures and different pictorial representations.

Counting Principles

Following research from Gelman and Gallistel in 1978, it is vital that teachers understand the five counting principles. (Gelman, R. & Gallistel, C. (1978) *The Child's Understanding of Number*. Cambridge, MA. Harvard University Press.)

1

The one-one principle. This involves children assigning one number name to each object that is being counted. Children need to ensure that they count each object only once ensuring they have counted every object.

Children will sometimes count objects more than once or miss an object out that needs to be counted. Encourage children to line up objects and touch each one as they count saying one number name per object. This will also help to avoid children counting more quickly than they touch the objects which again shows they have not grasped one-one correspondence.

2

The stable-order principle. Children understand when counting, the numbers have to be said in a certain order.

Children need to know all the number names for the amount in the group they are counting. Teachers can therefore encourage children to count aloud to larger numbers without expecting them to count that number of objects immediately.

3

The cardinal principle. Children understand that the number name assigned to the final object in a group is the total number of objects in that group.

In order to grasp this principle, children need to understand the one-one and stable-order principle. From a larger group, children select a given number and count them out. When asked 'how many?', children should be able to recall the final number they said. Children who have not grasped this principle will recount the whole group again.

4

The abstraction principle. This involves children understanding that anything can be counted including things that cannot be touched including sounds and movements e.g. jumps.

When starting to count, many children rely on touching the objects in order to count accurately. Teachers can encourage abstraction on a daily basis by counting claps or clicks. They can also count imaginary objects in their head to encourage counting on, this involves the children visualising objects.

5

The order-irrelevance principle. This involves children understanding that the order we count a group of objects is irrelevant. There will still be the same number.

Encourage children to count objects, left to right, right to left, top to bottom and bottom to top. Once children have counted a group, move the objects and ask children how many there are, if they count them all again they have not fully grasped this principle.

Language for adults

Cardinal - The number that indicates how many there are in a set.

Classification - The identification of an object by specific attributes, such as colour, texture, shape or size.

Conservation (of number) - The recognition that the number stays the same if none have been added or taken away.

Numeral - The written symbol for a number; e.g. 3, 2, 1

Ordinal - A number denoting the position in a sequence e.g. 1st, 2nd, 3rd, etc or page 1, page 2, page 3...

Partition - Separate a set into two or more subsets e.g. Partition a set of socks into plain and patterned.

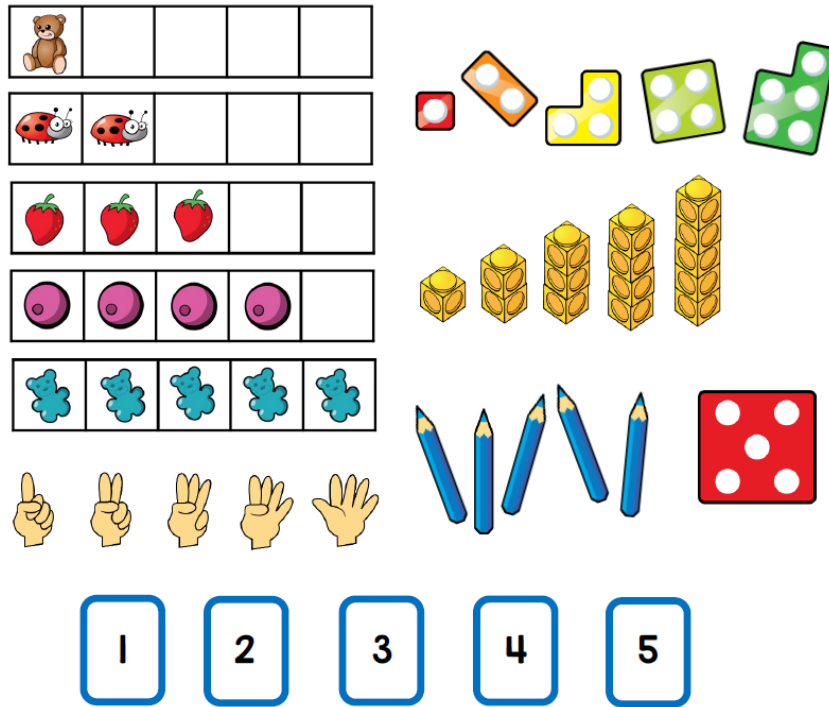
Subitise - Instantly recognise a small quantity, without having to count how many there are.

Number - Number can be:

- a count of a collection of items e.g. three boxes,
- a measure e.g. of length or weight, or
- a label e.g. the number 17 bus

Quantity - The amount you have of something e.g. a cup of flour, three boxes, half an hour.

Key Representations



Notes and guidance

When teaching counting to 5, consider the **counting principles** at all times. At this early stage, ensure that children are counting real-life objects. They could start by counting objects that are identical before moving on to counting objects that have slight differences e.g. different colours, different sizes. Make sure that the objects are of the same type e.g. apples, cubes, books.

Encourage children to put objects into a line when counting so they have a clear start and end point.

The five frame can be used to support children in lining up objects to count. It will also support children to **subitise** numbers within 5

Numerals may be introduced to children but they are not expected to write them at this stage. They could use informal jottings and/or drawing to record their thinking.

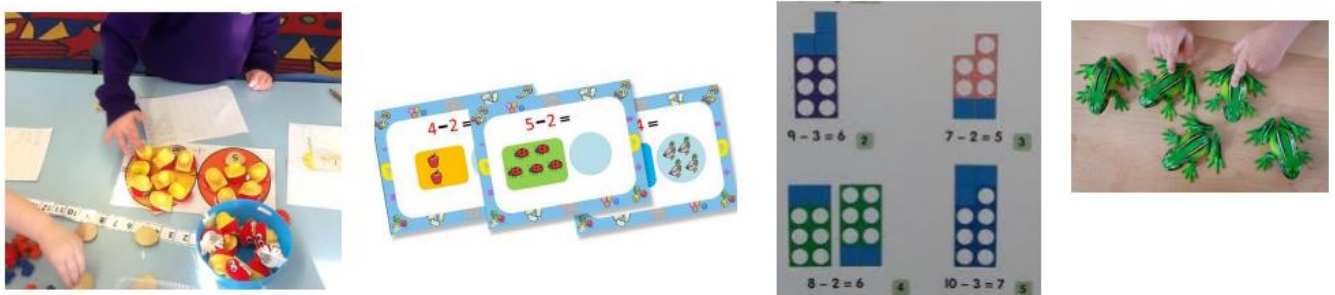


Examples of working with calculation in EYFS

Addition



Subtraction



Multiplication



Division

