



Maths EYFS and Year 1

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Session content

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Maths in school

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Maths at home



How do we teach maths in school?

- Daily maths input
- Small group work
- 1:1 with a child
- Within provision
- Mastering number program
- White Rose Maths



In EYFS all aspects of maths are covered however at the end of the year the children are assessed in Number and Numerical Patterns.

Mathematics

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.

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.

In Year 1 the children are then assessed against all aspects.

- Count to and across 100, forwards & backwards from any number.
- Read and write numbers to 20 in numerals & words.
- Read and write numbers to 100 in numerals.
- Say 1 more/1 less to 100.
- Count in multiples of 2, 5 & 10.
- Use bonds and subtraction facts to 20.
- Add & subtract: o1 digit & 2 digit numbers to 20, including zero.
- Solve one-step multiplication and division using objects, pictorial representation and arrays.
- Recognise half and quarter of object, shape or quantity.
- Sequence events in chronological order.
- Use language of day, week, month and year.
- Tell time to hour & half past



What is Mastering Number?

- Specifically for younger children (KS1) and helps children to become more fluent and flexible with number facts.
- It ensures that understanding of number facts is deep and embedded which gives children a very firm grounding on which to build more abstract/complex number understanding.
- The programme focuses heavily on the language involved with numbers and embeds single digit number patterns and rules that can then be extended and applied to larger numbers as children progress through the primary phase.
- Teaching begins to move away from counting as a 'solving strategy'
- Lessons introduce and develop strategies such as subitisation which is the ability to look at an amount and know how many are there
- These strategies are more efficient in nature and, therefore, free up children's working memory



There are six key areas of early mathematics learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school, and beyond.

> Cardinality and Counting Comparison Composition Pattern Shape and Space Measures





Cardinality and counting

It takes years to learn to count!

Cardinality is understanding: Anything can be counted The last number counted makes the total

It is understanding that the value of the number represents the quantity or the 'howmanyness' of what the digit represents.

Cardinality and counting - What children need to know

Counting: Saying number words in sequence. Tagging each object with one number word. Knowing the last number counted gives the total.

> Subitising: Recognising small quantities without the need to count them.

Numeral meanings



Conservation:

Knowing that the number does not change if things are rearranged



Hungarian Dice Frame







Number Blocks

The program utilises the TV program Number Blocks.

This is something you can also use at home to support your child.

The program gives excellent visual representation of numbers and how they are used.

https://www.youtube.com/watch?v=eJv6EAVrhdo





Cardinality and counting - Common misconceptions

- Missing out an object or counting an object twice
- When asked how many cars are in a group of four, simply recounting '1, 2, 3, 4,' without concluding that 'there are four cars in the group'
- When asked to 'get five oranges' from a trayful, a child just grabs some, or carries on counting past five
- When objects in a group are rearranged, the child (unnecessarily) recounts them to find how many there are
- Difficulties in counting back
- Confusion over the 'teen' numbers they are hard to learn
- Missing a number like 15 (13 or 15 are commonly missed out) or confusing 'thirteen' and 'thirty'.



Composition - What children need to know

Composition is the knowledge that a number is made up from 2 or more smaller numbers. Knowing numbers are made up of 2 or more other smaller numbers involves 'part-whole' understanding. Learning to 'see' a whole number and its parts at the same time is a key development in children's number understanding. Partitioning numbers into other numbers and putting them back together again underpins understanding of addition and subtraction as inverse operations.



Inverse operations

Part whole: identifying smaller numbers within a number A number can be portioned into different pairs of numbers A number can be partitioned into more than two numbers

Number bonds: knowing which pairs make a given number

Concrete - Pictorial - Abstract approach

Tom had 3 apples. His mother gave him 4 more apples. How many apples did he have altogether?





Composition - Common misconceptions

- Children suggesting that a larger number than the total are hidden.
- Children choosing the wrong pair when looking at number bonds.
- Children creating the incorrect inverse.



Comparison - What children need to know

Comparing numbers and knowing if they are more or less than a previously stated number. This skill is reliant on the children understanding the value of number and having the understanding that as numbers go up their value increased.

More than/less than

Comparing numbers and reasoning

Identifying groups with the same number of objects



Knowing the 'one more than/less than' relationship between counting numbers

Comparison In the classroom









Comparison - Common misconceptions

- children not comparing the numerosity of the group and considering more in terms of size.
- children giving a response that does not match the context when estimating a number; e.g. when adding, giving as an answer a number that is smaller than the numbers given.
 Example: 'There are 7 cars in a garage and then 2 more go in.' The child guesses there are 4 cars in total inside.



Pattern - What children need to know

The focus is on repeating patterns, progressing from children copying simple alternating AB patterns to identifying different structures in the 'unit of repeat', such as ABB or ABBC. Patterns can be made with objects like coloured cubes, small toys, buttons and keys, and with outdoor materials like pine cones, leaves or large blocks, as well as with movements and sounds, linking with music, dance, phonics and rhymes. Children can also spot and create patterns in a range of other contexts, such as printed patterns, timetables, numbers and stories.

Children need to be able to:

- Continue a pattern
- Copy a pattern
- Make their own pattern
- Spot errors in patterns
- Continue a pattern which ends abruptly in the middle of a pattern unit
- Fill in missing gaps in a pattern



$Pattern \quad \text{In the classroom} \\$









Pattern - Common misconceptions

- Not recognising a pattern such as ABBA (e.g. stating that patterns cannot have two of the same colour together)
- When copying or extending a pattern, changing it before making three repeats
- Spotting that there is an error but not being able to describe it
- Identifying an error but not being able to correct it
- Correcting an error by making a 'local correction', which just moves the problem along (e.g. by adding an extra item when colours have been swapped)
- Describing the whole pattern instead of identifying the part which repeats, or the unit of repeat.



Shape and Space - What children need to know

Mathematically, the areas of shape and space are about developing visualising skills and understanding relationships, such as the effects of movement and combining shapes together, rather than just knowing vocabulary.

Developing an awareness of relationships between shapes

Developing special awareness: experiencing different viewpoints

Describing properties of shape

Representing spatial relationships

Showing awareness of properties of shape

Identifying similarities between shapes

Developing spatial vocabulary

Shape awareness: developing shape awareness through construction

Shape and Space In the classroom















Shape and Space - Common misconceptions

- Children thinking that only regular triangles are triangles, only brick-like rectangles are rectangles (i.e. shapes are defined by their image, not by their properties)
- Children thinking that shapes are only shapes when their orientation is regular e.g. squares are only squares when the bottom is horizontal.

Measure - What children need to know

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

- Recognising attributes
- Comparing amounts of continuous quantities
- Showing awareness of comparison in estimating and predicting
- Comparing indirectly
- Recognising the relationship between the size and number of units
- Beginning to use units to compare things
- Beginning to use time to sequence events
- Beginning to experience specific time durations





Measure In the classroom











Measure - Common misconceptions

- Keeping track of events, e.g. 'Have I had my lunch yet?'
- Positional language associated with time; muddling the relative terms 'yesterday' and' tomorrow'
- Using 'long' to describe the shape of something (e.g. a block that is much longer than it is wide) rather than to compare lengths
- Not taking into account both ends as the starting and stopping point
- Not being able to say 'than' in the phrase, 'this is longer than that'
- Not understanding that units must cover a complete length, with no gaps or overlaps, demonstrated by thinking that measuring is about counting units placed along something, or putting a ruler alongside and saying a number
- Not understanding that units must be equal.



What can you do at home to help?







What can you do at home to help?

- Use everyday opportunities to count and recognise numerals
- Support the use of comparative language
- Talk about daily routines
- Play board games or copying games
- Set challenges time your child
- Talk about every day maths that you use and encourage your child to help you solve problems
- Get your child to set the table, help with serving or preparing food.
- Bake together



What can you do at home to help?

- Use White Rose 1 minute maths
- Maths unit newsletters
- My Maths
- Topmarks maths games
- BBC website
- Watch Number Blocks together and talk about what is happening in the episode.
- Maths Seeds (App)
- Orchard Games (physical games to play)









Play store



App store

Any questions?