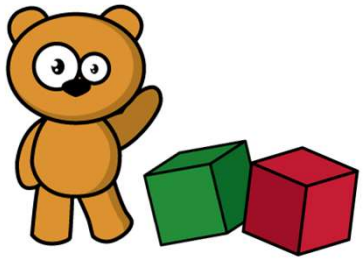
Guidance for Teachers

Reception

#MathsEveryoneCan

Updated September 2021

Reception Guidance



Our guidance underpins the Educational Programme for Mathematics (DfE March 2021) and will support you to deliver a curriculum that embeds mathematical thinking and talk.

Our overviews support the ethos of the EYFS whilst at the same time enabling teachers to create a mathematically rich curriculum. Additionally, it allows for key mathematical concepts to be revisited and developed further across the year.

The guidance has been divided into ten phases and provides a variety of opportunities to develop the understanding of number, shape, measure and spatial thinking.

The 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.

1 2 3 4 5

The Counting Principles

2

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

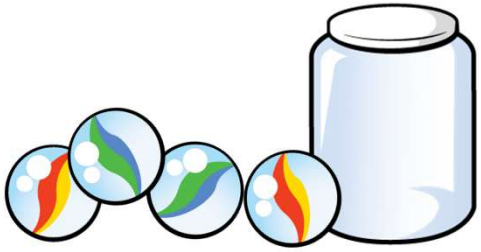
Children need to know all the number names for the amount in the group they are counting. Teachers can therefore encourage children to count aloud to larger numbers without expecting them to count that number of objects immediately.

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.

The Counting Principles



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.

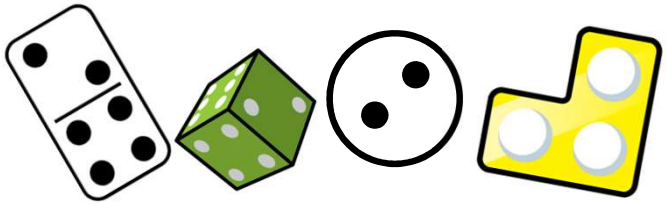
When starting to count, many children rely on touching the objects in order to count accurately. Teachers can encourage abstraction on a daily basis by counting claps or clicks. They can also count imaginary objects in their head to encourage counting on, this involves the children visualising objects.

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.

Key Language for Teachers



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.

Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	Getting to Know You			Just Like Me!			It's Me 1 2 3!			Light and Dark			Consolidation	
Spring	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation				
Summer	To 20 and Beyond			First Then Now			Find My Pattern			On The Move				

Autumn

Week 1	Week 2	Week 3		Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Getting to Know You			Phase	Just Like Me!			It's Me 1 2 3!			Light and Dark		
Opportunities for settling in, introducing the areas of provision and getting to know the children.			Number	Match and Sort Compare Amounts			Representing 1, 2 & 3 Comparing 1, 2 & 3 Composition of 1, 2 & 3			Representing Numbers to 5. One More and Less.		
Key times of day, class routines. Exploring the continuous provision inside and out. Where do things belong? Positional language.			Measure, Shape and Spatial Thinking	Compare Size, Mass & Capacity Exploring Pattern			Circles and Triangles Positional Language			Shapes with 4 Sides. Time		

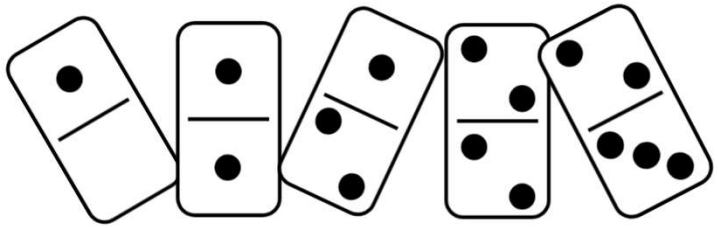
Spring

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Phase	Alive in 5!			Growing 6, 7, 8			Building 9 & 10		
Number	Introducing zero Comparing numbers to 5 Composition of 4 & 5			6, 7 & 8 Combining 2 amounts Making pairs			Counting to 9 & 10 Comparing numbers to 10 Bonds to 10		
Measure, Shape and Spatial Thinking	Compare Mass (2) Compare Capacity (2)			Length & Height Time			3d-shapes Patterns		

Summer

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Phase	To 20 and Beyond			First Then Now			Find my Pattern			On the Move		
Number	Building Numbers Beyond 10 Counting Patterns Beyond 10			Adding More Taking Away			Doubling Sharing & Grouping Even & Odd			Deepening Understanding Patterns and Relationships		
Spatial Thinking	Spatial Reasoning (1) Match, Rotate, Manipulate			Spatial Reasoning (2) Compose and Decompose			Spatial Reasoning (3) Visualise and Build			Spatial Reasoning (4) Mapping		

Frequently Asked Questions



How do we use the guidance to plan?

The aim of the guidance is to provide a bank of ideas to support the teaching of mathematics in Reception.

The first page in each section provides guidance, resources and prompts for adult-led focused teaching. The second page suggests how these ideas can be further explored through the areas of provision, either independently or with adult support. At the end of each section, there is a digging deeper page with suggestions for exploring concepts more deeply and providing opportunities for additional challenge.

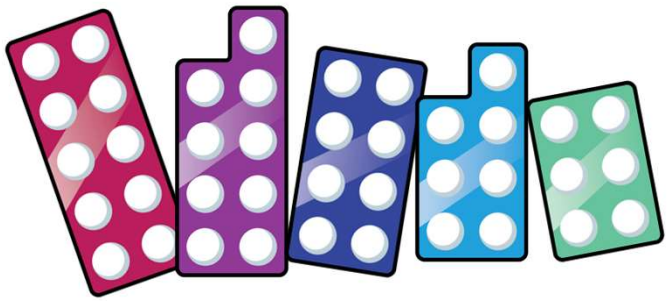
The great thing about early number skills is that they can be applied to almost anything. This gives teachers the flexibility to adapt the activities to match their current theme or the interests of their children as they plan for their next steps.

What should our maths timetable look like?

This is for individual schools to decide. We recommend that time is built in daily for short adult-led focused inputs which can either be for the whole class or groups. This doesn't have to be formal and should include number rhymes, songs, and games as well as the suggested prompts for learning.

The concepts introduced can be taken further with short teacher led activities. We recommend 2-3 each week. Opportunities to practise new skills through play should also be encouraged in the different areas of provision, either independently or with adult support. The children should also have regular opportunities to practise their counting and subitising skills and revisit prior learning.

Frequently Asked Questions



How long should we spend on each phase?

The amount of time you spend on each phase will depend on the needs of your children. Use your professional judgement to move children on when you feel they are ready.

We recommend around 3 weeks to fully teach each phase but if your children are very confident with the numbers to 5 then you may want to spend less time on the early phases and more time later on. There are consolidation weeks built in to allow some flexibility with timings.

Key skills of counting, subitising, composition, ordering and comparing are threaded throughout the guidance and get progressively more challenging.

Do we need to follow the skills in order?

We would recommend following the **Number** skills in order as these build up over time and follow a developmental progression.

Links to **Shape, Space and Measure** have been included within the guidance. These can be taught at any time to best fit your themes or interests of your children and will be ongoing through continuous provision.

The **Spatial Reasoning** skills included in the summer term phases also follow a developmental progression.

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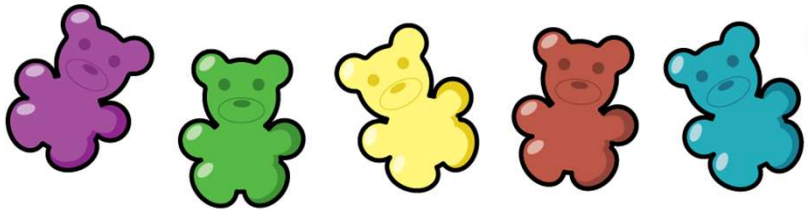


Why is there such a big focus on the early numbers?

It is important that children develop a really strong sense of numbers to 10. This will stand them in good stead for the maths that follows as they move through school.

This includes:

- Understanding the link between numbers and quantity (representing numbers in many ways)
- Investigating how quantities are composed of smaller parts (6 can be two 3s or three 2s or 4 and two ones or 5 and 1 etc.)
- Knowing how the numbers relate to one another and being able to compare and order them.
- Exploring how quantities change when you add more items or take items away.

The children may already be able to recite the number names to twenty and beyond but a sense of what those numbers mean develops gradually with repeated experiences in different contexts.

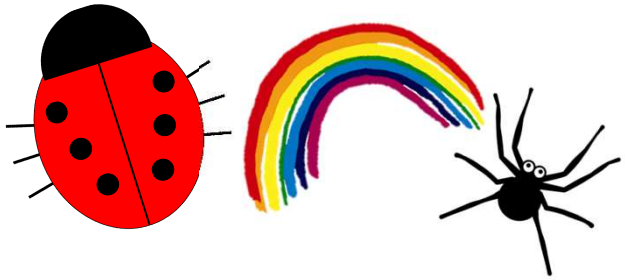
Some of my children are already confident with numbers to 5. How can I ensure they are being challenged?

Provide opportunities for the children to apply their understanding to reason and problem solve. Can they work out how many items are hidden if they know there are 5 altogether? Encourage them to invent their own games and use mathematical jottings to record and compare their scores.

Although your inputs are focused on exploring smaller numbers in depth, this doesn't mean that the children will only count to 5. Many children love to explore larger numbers during their play, and this should be encouraged and celebrated.

The digging deeper pages within the guidance are designed to explore concepts more deeply and build in additional challenge. They are largely open-ended and encourage the children to explain their mathematical thinking and reasoning.

Frequently Asked Questions



Why is there no mention of teaching money in the guidance?

It is essential that children develop a strong sense of cardinality and at this age, children are still developing the understanding that 5 objects represent 5. It is a difficult concept for young children to understand that one coin can be worth 2p, 5p or 10p.

Although money is not included as a teaching focus, you may still want to provide some coins for children to explore within provision.

One possibility for Reception could be to count out the corresponding number of 1p coins to match prices in pence. The children could then compare to see which items cost more in much the same way that they may represent and compare quantities with counters.

Why is day to day planning not provided?

The guidance provides a developmental progression of skills and it is up to individual teachers to judge when children are ready to move on.

As part of the curriculum, it is essential that teachers have the flexibility to respond to their children's interests. The guidance provides a bank of ideas to be used as a starting point. There is no expectation to complete all of the suggested activities. Teachers can select the activities that best meet their children's needs and interests and supplement these with their own ideas.

The home learning was created in response to the pandemic so that children at home could experience maths everyday. This can still be used to support planning, but teachers will also need to respond to their children's interests and include the essential hands-on learning required in the EYFS curriculum.

Important Links and Websites

The NCETM Early Years Area

The aim of this section is to help teachers and practitioners in Early Years settings have a clearer understanding of how children build early number sense, and to provide tips on how best to support that learning.

https://www.ncetm.org.uk/resources/51439

Number Blocks

Numberblocks, first broadcast in January 2017, is a pre-school BBC television series aimed at introducing children to early number.

Snappy animation and loveable characters combine with engaging storylines to gently introduce concepts of number to support early mathematical understanding.

https://www.bbc.co.uk/cbeebies/shows/numberblocks

NRICH

The NRICH Early Years resources aim to further develop young children's natural problem-solving abilities in the context of mathematics.

https://nrich.maths.org/early-years

Learning Trajectories

[LT]^2 is a web-based tool for early childhood educators to learn about how children think and learn about mathematics and how to teach mathematics to young children (birth to age 8).

https://www.learningtrajectories.org/

Early Math Collaborative

The Erikson Institute Early Math Collaborative is transforming the understanding, teaching and learning of early mathematics from the ground up.

https://earlymath.erikson.edu/

EEF Improving Mathematics in the EY and KS1

This guidance report summarises the latest research into early maths education and offers 5 practical recommendations for teachers to support the learning of children aged 3-7.

https://educationendowmentfoundation.org.uk/tools/guidance-reports/early-maths/