



SCHOOL TRUST APPROACH TO TEACHING MATHS IN EYFS

FLOURISHING FUTURES
Empower, Excel, Together

Change Log

Autumn 2022	New protocol

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1. Our Maths Curriculum Intent

As mathematicians, our children will develop a deep conceptual understanding through exploration, reasoning and problem solving of all areas. We expect our children to explain and articulate their understanding and become fluent in number so they can use known number facts to make efficient choices with calculations. They will make connections and discover patterns to take creative approaches when faced with challenges and show appreciation of the beauty and power of Mathematics. We aim to develop resilient learners and our children take time to deepen their understanding of mathematical structures through the use of resources and representations.

2. Rationale

Our approach to teaching Maths in the Early Years leaves nothing to chance. We are using Maths every day, in the same way we read every day. We plan in schools for when every grapheme-phoneme-correspondence is taught and therefore we wanted an approach to teaching Maths that mapped out when every number fact and mental calculation strategy would be taught to ensure we had a systematic and consistent approach to teaching these skills, in the same way we teach Phonics. We choose to use the Number Sense Maths Programme because Number Facts every single addition and subtraction fact is mapped to one or more calculation strategies that are taught through the programme in KS1 and the Early Years Programme provide the rich foundations and depth of number sense that supports that later teaching. Just as Phonics is taught in short daily sessions, number fact teaching works well with this approach too, with sessions including review, teaching, practice and application. We believe that attention to small units in early Maths instruction can have the same impact as attention to small units in early reading, which has been described as ‘...helpful for all children, harmful for none, and crucial for some’ (Snow & Juel, 2005, pp. 501–520). All children will benefit from being taught about number and number relationships in a carefully structured way, and for some children it is crucial to provide the firm foundation to build the next 10 or so years of school Maths lessons.

For details of how our approach meets the statutory requirements of the 2021 Framework please see Appendix 1

3. Assessment Guidance

There is no requirement for children to produce written outcomes to use as evidence towards the ELGs. The most useful assessment of what children understand will come by talking to them, showing an interest in their thinking and asking them to explain what they have noticed and what they are thinking: “Effective assessment takes place when children are taught well and can talk about what they know, demonstrating their learning and development in a range of contexts.” (EYFS Profile Handbook). In this way, assessment will not take practitioners away from the children, but rather encourage greater interaction with them. Children are encouraged to use their own Mathematical graphics and pictures to show their thinking, and crucially then talk to you about what these show. They will not be given worksheets to complete.

Practitioners also need to be clear about what they want children to know and be able to do. The mapping document here ([assessment guidance through the ELGs](#)) provides guidance on which books within the Early Years Number Sense Programme supports the teaching of concepts leading to each ELG, and also any animations that can particularly be used to support assessment. The Trust approach is to carefully watch and listen to children’s responses as you use the animations. Teachers may note who can and cannot yet do certain things e.g subitise to five and may position themselves next to different children in daily counting routines to listen, so that they are confident they have identified all children who need targeted support and can plan additional appropriate teaching for these children.

4. Long term overview

The yearly plan for whole class maths sessions in Reception for schools using Mastering Number:

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1	Settling, Baseline, All About Me			Non-Number		Number: Subitising quantities to 3	
				Spatial reasoning <i>Construction and 3D shapes</i>	Spatial reasoning <i>Construction and 3D shapes</i>	Book 1: Subitising 1-2	Book 2: Subitising 1-3
				Continue spatial reasoning for rest of term through provocations in continuous provision			
	Numberblocks Series 1, episodes 1 -15 (focus One to Five)						
Autumn 2	Non-Number		Number: Subitising quantities to 5				
	Spatial reasoning <i>2D shapes and shape puzzles</i>	Spatial reasoning <i>2D shapes and shape puzzles</i>	Book 3: Subitising 1 - 4	Book 3: Subitising 1 - 4	Book 4: Subitising 1 - 5	Book 4: Subitising 1 - 5	
	Continue spatial reasoning for rest of term through provocations in continuous provision						
	Numberblocks – watch again Series 1, episodes 1 -15 (focus One to Five) this embeds a deep understanding of numbers to 5						

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Spring 1	Non-Number		Number: Enumerating between 6 and 10 items			
	Pattern	Pattern	Book 5: Subitising 6-10	Book 5: Subitising 6-10	Counting out up to 10 items from a collection (not covered by NSM)	
	Continue pattern all term through provocations in continuous provision					
	Numberblocks Series 2, episodes 1 -15 (focus Six to Ten)					
Spring 2	Non-Number	Partitioning 2, 3, 4, 5 and 10 and 'number bonds' for these numbers				
	Spatial reasoning <i>Symmetry (incl. shape puzzles & construction)</i>	Books 6 & 7: Partitioning 2 and 3	Book 8: Partitioning 4	Book 9: Partitioning 5	Book 10: Partitioning 10	Book 10: Partitioning 10
	Continue spatial reasoning all of term through provocations in continuous provision					
	Numberblocks – watch again Series 3, episodes 1 -15 (more about One to Ten)					

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Summer 1	Non-Number		Number: Composition of 6 – 9 and comparison of numbers to 10			
	Measures	Measures	Book 11: Composition of 6-9	Book 11: Composition of 6-9	Book 12: Comparing numbers to 10	Book 12: Comparing numbers to 10
	Continue measures all term through provocations in continuous provision					
	Numberblocks Series 3, episodes 16 -30 (focus Eleven to Fifteen) supports counting up to and through 20. Further deepens numbers One to Ten					
Summer 2	Number: Patterns in numbers to 10			Non-number		
	Book 13: Patterns in odd and even numbers	Book 13: Patterns in doubles	Book 13: Equal distribution	Pattern	Spatial reasoning <i>Maps and Plans</i>	Measure
	Continue spatial reasoning for rest of term through provocations in continuous provision					
	Numberblocks Series 4, episodes 1 -15 (focus Sixteen to Twenty) supports counting up to and through 20. Further deepens numbers One to Ten					

5. Non-negotiables

In week 6 we would see everyone across the Trust teaching NSM Book 1 but provision would still be out targeting the practice of 3D shapes and construction as well as enhancing Continuous Provision with questioning regarding subitising 1 and 2 (current focus of book 1).

Each term begins with a non-number focus to maintain a broad and balanced Mathematics curriculum. As the overview outlines, when the focus of the whole class Maths session then moves to number, non- number teaching must continue through the rest of the term in continuous provision and provocations planned for and made known to all adults, drawing on the opportunities outlined in the documents below.

6. Targeted individual support

The initial non-number weeks of each term should also be used to consolidate number learning from the previous term, both in the provision and through targeted small group and individual intervention to close the gap.

7. Teaching resources for Pattern, Shape, Space and Measure (Non-Number)

The first 3 weeks of the Autumn Term are deliberately not specified to allow time to settle children, conduct baseline assessments and get to know them. Teachers may want to draw on the 'All about me' resources from White Rose Maths but this is only a suggestion.

From week 4 onwards all teachers are expected to follow the long-term overview above.

Although the ELGs focus only on number we recognise that this is only part of the curriculum outlined in The Early Years Foundation Stage framework and therefore in non-number weeks teachers should be focusing on the '*rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics, including shape, space and measures.*'

The following resources should be the starting point for planning teaching in non-number weeks:

- Development Matters, Non-statutory Guidance <https://www.gov.uk/government/publications/development-matters--2> p84 - outlines what children will be learning to do at each age and stage and provides examples of how to support this, both through direct teaching and in the provision.
- Learning Trajectories Website (Clements, D and Sarama, J) https://www.learningtrajectories.org/learning_trajectories which has the developmental trajectory for all aspects of maths to support with assessing children's starting points and tracking forwards and backwards with suggested teaching and learning opportunities to develop a particular aspect of the trajectory, accompanied by supporting videos of what a child might be able to do if they are at that point on the trajectory
- Spatial Reasoning (including shape and space): The Early Childhood Maths Group spatial reasoning toolkit which includes a trajectory of early learning experiences to develop spatial reasoning (p. 30 onwards) <https://earlymaths.org/spatial-reasoning-toolkit/> The main focus for each term is outlined above and these can be seen clearly in the trajectory
- Pattern: The NCETM progression maps provide a developmental progression to support teaching and suggested teaching activities and learning opportunities <https://www.ncetm.org.uk/classroom-resources/ey-pattern/>
- Measures: The NCETM progression map for this area of mathematics would also be the best starting point <https://www.ncetm.org.uk/classroom-resources/ey-measures/>

[Example weekly maths planning format](#) can be found here.

8. Elements of Daily Maths provision in EYFS

- Daily mathematical routines
- Daily whole class maths sessions (direct teaching)
- Other mathematical provision through the week and term

Daily Mathematical Routines

These should be planned in the EYFS team at the start of the year. They can remain consistent through the year, so are limited in workload, although they may develop in challenge as children's understanding of Mathematics develops. All adults in the team should know the mathematical focus of each routine and how to prompt the children within the routine to develop their skills and understanding.

Adding Maths talk activities to your daily routine

Developing maths talk in your daily routine gives learners a chance to understand it while using real-life concepts. It also means that children can consolidate what they have learned and practice, practice, practice!

Some example routines can be found in Appendix 2

9. Pedagogy of daily direct maths teaching

The yearly overview document above shows the suggested focus for the main maths teaching in Reception through the school year. These sessions should:

- Be no more than 15 or so minutes in length
- Have a strong focus on talk and reasoning
- Collectively provide a coherent progression through the mathematics, so that children are supported to spot connections, patterns and relationships.

Teaching sessions include opportunities to review and rehearse prior learning and also suggest ideas for how children might extend their learning during the day.

Both direct maths teaching and the continuous provision should make use of practical activities and equipment, giving young children materials to manipulate to aid their understanding and lay the foundations for visual images that represent numbers. This also includes the use of traditional games, which enable children to apply their counting and hone their early calculation skills.

As stipulated in Development Matters, effective pedagogy is a mix of different approaches. Children learn through play, by adults modelling, by observing each other, and through guided learning and direct teaching, which is why maths teaching supports a mix of these

Targeted support time in the first couple of weeks of each term can be used to consolidate number learning from the previous term, as a foundation for the new number learning coming up that term. This runs alongside the non-number teaching.

Before teaching any Number session teachers are advised to read this short overview which illustrates and explains the progression through a book and how the animations carefully build an understanding of number ([example progression within a book: Book 9, Partitioning 5](#)). In summary, the programme uses simple, striped back images which expose mathematical structure, develops an understanding of quantity before introducing numerals and provides built in teacher guidance and subject knowledge support.

10. Other mathematical provision through the week

The continuous provision

This is the independent work - teachers plan out support and challenge in the various areas of the provision, based on the direct teaching focus for that week. The whole class maths session is the hook that initiates the key ideas, which are then followed up through provocations in the provision. Examples can be found here <https://lpsw.sharepoint.com/:f:/r/sites/AllAcademies/Shared%20Documents/EYFS%20Trust/Maths%20Daily%20Provision?csf=1&web=1&e=QSN50T>

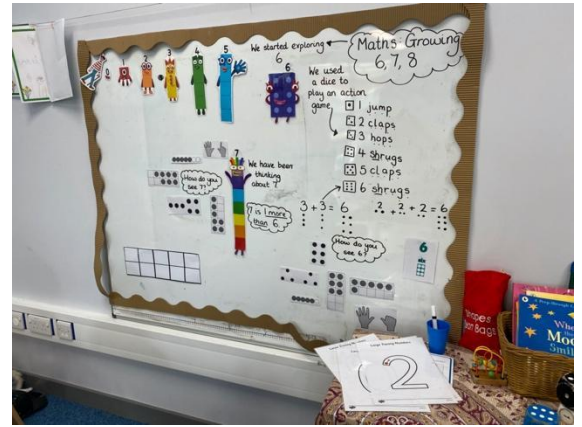
All adults are empowered to support children in the provision as teachers provide clear questions and prompts for the various areas, both in the area and on shared planning, so that all adults know what the focus and intention is

In line with the Trust ethos, learning environments include engaging learning opportunities that the children are able to access independently and that offer opportunities to apply new skills that they have learnt at school and consolidate and develop their existing skills, Children should be able to apply skills in literacy and numeracy in all areas of learning e.g. solving mathematical problems in role play or applying literacy skills in the construction area. These opportunities should be equally accessible in the inside and outside learning environments and will be most effective when facilitated by skilled practitioners who are able to model and support children to develop their understanding.

In addition to this, there may be adult-led small group teaching tied to the focus for that week, which is practical, engaging and talk based (group games or activities) which support further practice and deepening of the key focus.

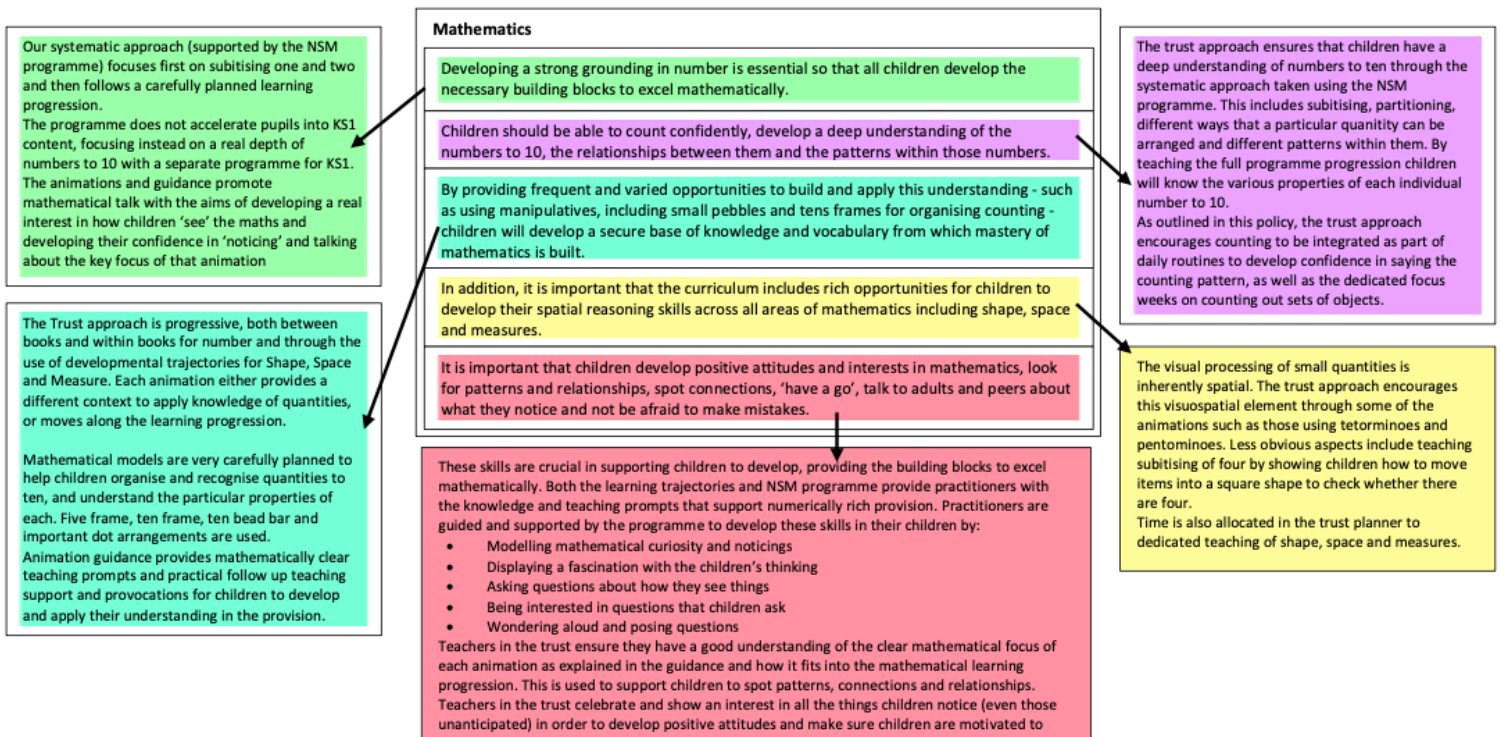
The Numberblocks programmes

The Numberblocks approach to developing children's visual understanding of number complements our number teaching approach. Episodes can be watched and discussed sequentially, as part of daily routines and/or teachers may use particular episodes that correspond to individual maths sessions. The long term overview document has details of which episodes to watch, which support particular maths concepts and a full breakdown can be found in Appendix 3



Appendix 1

How the Trust approach meets the 2021 Statutory Framework



Appendix 2

Example routines to develop mathematical skills on a daily basis

Registration and dinners: How many children are at school?

There are lots of opportunities for children to count during the school day. One easy activity is to get your class to work out how many children are at school by placing a picture of themselves or a counter representation on large ten frames. This is a great way of counting and spotting patterns using ten frames. Ask learners questions like:

“How do we know this ten frame is full? Do we need to count them to know how many are in here?”

“How many children are absent?”

“How do you know?”

“What can you tell me about the number ___?”

“There are two tens and seven more of us here today”



Getting learners familiar with ten frames and building their number sense in the early years is great preparation for Year 1.



Sorting and grouping objects as a class

Sorting and grouping objects as a class helps children learn to reason and look for patterns — skills they’ll need to master maths.

Give children a variety of buttons each day and ask an open-ended question like, “how can we sort the buttons?” The children should use their critical-thinking skills and come up with a range of ideas like sorting by size, colour, pattern, and shape.

Vote for a story

Provide an area for children to vote for a book. First, ask a child to pick two books. The rest of class then votes for their favourite book using a piece of lego. Cubes, counters, or any other abstract concrete resources will also work. <https://nrich.maths.org/13894>

Every child has one vote a day and should place their lego piece next to the book they want to listen to during storytime. But of course, only the winning book is read.

We have great discussions on which book has won each day.

“Why?”

“How do you know?”

“How many more votes did one book have than the other?”

The rich opportunities for maths talk in this simple daily activity are endless. My class loves this activity and it’s just as effective in KS1 as well as the early years.

Snack time:

Children love to help, so think about the mathematical learning opportunities in a daily routine like preparing the snack table:

- when halving or quartering fruit, ask the children to tell you how many pieces there are
- can they tell you whether the pieces are bigger or smaller than each other
- have a variety of foods, sort them onto plates and ask what's the same or different (for example look, feel and smell)
- measure capacity together when pouring drinks
- ask whether you have enough chairs or cups for everyone and if you need to take some away
- use a visual timetable to sequence the order of events and time.
- Exchanging counters for a piece of fruit

<http://emwest.co.uk/wp-content/uploads/2021/02/Mathematical-Snack-Times-1.pdf> gives some great ideas

Lining Up: counting opportunities up to and beyond 20

Tidying Up:

If resources are organised in containers with number labels or pictures of mathematical apparatus such as dice, numicon, dot patterns, showing how many there should be, then everyone can be involved in 'stock checks' to count and see if any are missing. 'Check point' number tracks help identify the missing number. Children can also match construction blocks or tools onto silhouettes, or numbered trikes to their parking bays. More questions to prompt and open this out can be found here: <https://nrich.maths.org/8856>



Appendix 3

How the NumberSenseMaths Programme maps to the Numberblocks episodes

Early Years Number Sense Book		Numberblocks Episode
1	Subitising 1 – 2	Series 1: One Series 1: Another One Series 1: Two
2	Subitising 1 – 3	Series 1: Three Series 1: One, Two, Three!
3	Subitising 1 – 4	Series 1: Four
4	Subitising 1 – 5	Series 1: Five
5	Subitising 6 – 10	Series 2: Six Series 2: Seven Series 2: Eight Series 2: Nine Series 2: Ten Series 3: Five and friends
6	Partitioning 2	Series 1: The Whole of Me
7	Partitioning 3	Series 1: Holes
8	Partitioning 4	Series 3: Numberblocks express
9	Partitioning 5	Series 3: Fruit salad
10	Partitioning 10	Series 3: Ten Again Series 2: Blast Off
11	Composition of 6 to 9	Series 3: Now we are six to ten
12	Comparing quantities to 10	Series 3 Blockzilla
13	Patterns in numbers to 10: Doubles	Series 2: Double Trouble
	Patterns in numbers to 10: Odds and evens	Series 2: Odds and Evens Series 5: Odd Side Story Series 2: The Two Tree
	Patterns in numbers to 10: Equal distribution	Series 4: The Lair of Shares