

What does Maths look like in Early Years?

Guidance for subject leaders

The EYFS statutory framework has been updated and the revised document will need to be used in all early years' settings and schools from September 2021. It is important that subject leaders understand what their specialist subject looks like in early years; how key knowledge and skills are taught and what progression through these may look like. There is no requirement for schools to adopt a particular teaching style or method and the school curriculum as a whole needs to be considered, so it meets the needs of your children, families and community. The ELG should not be seen as your curriculum as this very narrow, merely a checkpoint for the end of the reception year. The revised EYFS still has seven areas of learning, rather than the individual subjects used within the National Curriculum but this document will highlight the main links between the two. Communication and Language development is key and is a 'golden thread' which runs through and underpins all other areas of learning, as does Personal, Social and Emotional Development. The statutory framework is supported by two non-statutory documents which schools can choose to use ('Development Matters' and 'Birth to Five Matters'). The table below shows where learning in early years links to the NC programme of study in Maths. These statements are just basic bones upon which to build your full curriculum. There is no requirement for schools to buy a published scheme for Maths; this is something for individual schools to discuss and agree upon.



For further information on Mathematics in EY, see the Cumbria County Council Early Years Mathematics Toolkit:
<https://www.cumbria.gov.uk/elibrary/Content/Internet/537/1459/7037/17952/44048142650.pdf?timestamp=44372113718>

Development Matters		Birth to 5 Matters	
Birth to Three – Babies and young toddlers will be learning to:	Mathematics Combine objects like stacking blocks and cups. Put objects inside others and take them out again. Take part in finger rhymes with numbers. React to changes of amount in a group of up to three items. Compare amounts, saying 'lots', 'more' or 'same'. Counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence. Count in everyday contexts, sometimes skipping numbers - '1-2-3-5.' Climb and squeezing selves into different types of spaces.	Range 1	Mathematics Number - Reacts to changes of amount when those amounts are significant (more than double) Spatial awareness - Explores space when they are free to move, roll and stretch. Developing an awareness of their own bodies, that their body has different parts and where these are in relation to each other. Shape - Explores differently sized and shaped objects. Beginning to put objects of similar shapes inside others and take them out again. Beginning to explore how objects with flat surfaces fit together.

Development Matters		Birth to 5 Matters	
	Build with a range of resources. Complete inset puzzles. Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'. Notice patterns and arrange things in patterns. Literacy Enjoy songs and rhymes, tuning in and paying attention. Say some of the words in songs and rhymes. Sing songs and say rhymes independently, for example, singing whilst playing. Expressive Arts and Design Join in with songs and rhymes, making some sounds. Notice patterns with strong contrasts and be attracted by patterns resembling the human face.		Pattern - Shows interest in patterned songs and rhymes, perhaps with repeated actions. Shows interest in repeated movements. Experiences patterned objects and images. Begins to predict what happens next in predictable situations.
		Range 2	Mathematics Number - Developing an awareness of number names through their enjoyment of action rhymes and songs that relate to their experience of numbers. Looks for things which have moved out of sight. Spatial Awareness - Engages with positions and directions, using gestures and words like 'on', 'in', 'on', 'under', 'up', 'down' as instructions or pointing to where they would like to go. Shape - Arranges objects using flat surfaces to stack. Responds to changes of shape. Attempts, sometimes successfully, to match shapes with spaces on inset puzzles. Pattern - Responds to patterns around them. Joins in with repeated actions in songs and stories. Initiates and continues repeated actions. Measures Shows an interest in objects of contrasting sizes in meaningful contexts. Gets to know and enjoys daily routines.
3 and 4 year olds will be learning to:	Mathematics Fast recognition of up to 3 objects, without having to count them individually ('subitising'). Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Show 'finger numbers' up to 5. Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.		Mathematics Comparison - Knows that things exist, even when out of sight. Compares amounts using words like 'lots' or 'more'. Counting - Says some counting words. Engages in counting-like behaviour, making sounds and pointing or saying some numbers in sequence. Cardinality - Uses number words, like 'one' or 'two' and sometimes responds accurately when asked to give one or two things. Spatial Awareness - Enjoys filling and emptying containers. Investigates fitting themselves inside and moving through spaces. Pushes objects through different shaped holes, moving them around to see if they fit.

Development Matters	Birth to 5 Matters
Experiment with their own symbols and marks as well as numerals. Solve real world mathematical problems with numbers up to 5. Compare quantities using language: 'more than', 'fewer than'. Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. Understand position through words alone – for example, "The bag is under the table," – with no pointing. Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'. Make comparisons between objects relating to size, length, weight and capacity. Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. Combine shapes to make new ones - an arch, a bigger triangle etc. Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc. Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...' Personal, Social and Emotional Development Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them. Show resilience and perseverance in the face of challenge. Understanding the World Talk about what they see, using a wide vocabulary.	Range 3 Shape Attempts to fit shapes into spaces on inset boards or puzzles, beginning to select a shape for a specific space. Uses blocks to create their own simple structures and arrangements including lines of identical shapes. Pattern - Becoming familiar with patterns in daily routines. Joins in with and predicts what comes next in a story or rhyme. Notifies, predicts and continues patterns in familiar contexts. Measures - Shows an interest in size and weight. Explores capacity by selecting, filling and emptying containers e.g. fitting toys in a pram. Associates a sequence of actions with daily routines. Beginning to understand that things might happen 'now' or at another time.
	Range 4 Mathematics Comparison -Beginning to compare and recognise changes in numbers of things, using words like 'more', 'lots' or 'same'. Counting - Says the number sequence, maybe skipping some numbers (e.g. 1-2-3-5) and beginning to count on their fingers. Cardinality (How many?) - Beginning to compare and recognise changes in numbers of things, using words like 'more', 'lots' or 'same'. Gets 2 or 3 objects from a group. Beginning to notice numerals (number symbols). Spatial Awareness - Moves their bodies and toys around objects and explores spaces, e.g. squeezing into a tiny gap. Begins to remember their way around familiar environments, e.g. knows where to find their favourite activity. Responds to spatial and positional language when used in conversation, e.g. pointing things out. Explores how things look from different viewpoints including things that are near or far away. Shape - Chooses puzzle pieces and tries to fit them in. Recognises that two objects have the same shape. Makes simple constructions.

Development Matters		Birth to 5 Matters	
			Pattern - Beginning to arrange items in their own patterns, e.g. lining up toys. Joins in and anticipates repeated sound and action patterns. Is interested in what happens next using the pattern of everyday routines. Measures - Compares sizes, lengths, weights and capacities using gesture and informal language. Beginning to understand some talk about immediate past and future. Anticipates times of the day such as mealtimes or home time. Communication and Language Developing understanding of simple concepts (e.g. big/little). Literacy Has some favourite stories, rhymes, songs, poems or jingles. Expressive Arts and Design Uses 3D and 2D structures to explore materials and/or to express ideas.
Children in reception will be learning to:	Mathematics Count objects, actions and sounds. Subitise. Link the number symbol (numeral) with its cardinal number value. Count beyond ten. Compare numbers. Understand the 'one more than/one less than' relationship between consecutive numbers. Explore the composition of numbers to 10. Automatically recall number bonds for numbers 0–10. Select, rotate and manipulate shapes in order to develop spatial reasoning skills. Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. Continue, copy and create repeating patterns. Compare length, weight and capacity.	Range 5	Mathematics Comparison - Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g. 'You've got two, I've got two. Same!'. Counting - Enjoys reciting numbers from 0 to 10 and back from 10 to 0. Has fun counting as far as they can go and is fascinated with large numbers. Shows interest in meaningful numbers. 'Tags' (reliably points or touches each item), saying one number for each item, using the stable order of 1,2,3,4,5 at first, and then later, to 10. Uses some number names and number language within play. Begin to recognise numerals 0 to 10 and some beyond. Cardinality Subitises: e.g. instantly recognising under 5 objects without counting. Recognises that the last number said represents the total counted so far (cardinal principle) with numbers to 5 and maybe beyond. Shows 'finger numbers', up to 5 and maybe beyond. Links numerals with amounts up to 5 and maybe beyond. Explores using a range of marks and signs to which they ascribe mathematical meanings.

Development Matters	Birth to 5 Matters
Communication and Language Learn new vocabulary. Use new vocabulary through the day. Ask questions to find out more and to check they understand what has been said to them. Describe events in some detail. Use new vocabulary in different contexts. Learn rhymes, poems and songs.	Composition - In their play and exploration children are beginning to learn that numbers are made up (composed) of smaller numbers. Beginning to recognise that each counting number is one more than the one before. Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same. Spatial Awareness - Responds to and uses language of position and direction. Explores from different viewpoints and points to things that are far away. Predicts, moves and rotates objects to fit the space or create the shape they would like. Shape - Chooses items based on shape so they are appropriate for specific tasks. Responds to both informal language and common shape names. Shows awareness of similarities and differences between natural and manufactured shapes in the environment. Partitions and combines shapes to make new shapes with 2D and 3D shapes. Creates arches and enclosures when building, using trial and improvement to select blocks. Pattern - Creates their own spatial patterns showing some organisation or regularity. Adds to simple linear patterns of two or three repeating items (AB or ABC). Join in with simple patterns in sounds, objects, games and stories dance and movement, predicting what comes next. Measures - Finds the longer or shorter, heavier or lighter and more/less full of two items. Sequences a small number of familiar events and beginning to respond to and use words such as 'before', 'after', 'soon' or 'later'. Communication and Language Shows understanding of prepositions such as 'under', 'on top', 'behind' by carrying out an action or selecting correct picture. Literacy Includes mark making and early writing in their play. Understanding the World Remembers and talks about significant events in their own experience. Expressive Arts and Design Uses various construction materials, e.g. joining pieces, stacking vertically and horizontally, balancing, making enclosures and creating spaces.

Development Matters			Birth to 5 Matters
		Range 6	Mathematics Comparison - Compares number names and symbols, showing interest in large numbers. Makes reasonable estimates of numbers of things, showing understanding of relative size. Counting - Counts items beyond 10. Puts numerals in order, 0 to 10 and sometimes beyond. Counts verbally from 20, beginning to spot repeating patterns. Cardinality - Subitises numbers to 4 or 5. Having counted, says the total (cardinal principle). Counts out up to 10 objects from a larger group. Selects the correct numeral for up to 10 objects. Composition - Shows awareness that numbers are made up (composed) of smaller numbers. Conceptually subitises larger numbers by subitising smaller groups within the number, e.g. sees 6 raisins on a plate as 3 and 3. Partitions a number of things in different ways, including when problem solving and talks about the ways a number can be made. Adds one and subtracts one, with numbers to 10 and uses some addition and subtraction vocabulary in practical activities. Children begin to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and “+” or “-”. Spatial Awareness - Uses spatial language, including relative terms depending on viewpoints. Follows and gives directions. Turns and flips objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning). Explores what can be seen from different viewpoints. Engages with 3D & 2D map-making in familiar environments, sequencing landmarks and designing small worlds. Shape - Uses informal language and analogies, (e.g. heart-shaped and hand-shaped leaves), as well as mathematical terms to describe shapes. Composes and decomposes shapes, learning which shapes combine to make other shapes.

Development Matters	Birth to 5 Matters
	Builds complex compositions including repeating units and selecting shapes to solve a problem. Plans to make models, selecting blocks needed and visualising what they will build. Pattern - Spots patterns in the environment, identifying the pattern 'rule'. Uses familiar objects to create and recreate repeating patterns beyond AB to ABC and perhaps ABB and ABBC. Begins to identify the core unit in a repeating pattern and beginning to use symbols. Makes border patterns where the repeating pattern continues around an object or frame. Measures - Solves problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy. Becomes familiar with measuring tools in everyday experiences and play. Orders and sequences events using everyday language related to time. Beginning to experience measuring time with timers and calendars. Personal, Social and Emotional Development Shows confidence in choosing resources and perseverance in carrying out a chosen activity. Communication and Language Maintains attention and concentrates and sits quietly during appropriate activity. Literacy Gives meaning to the marks they make as they draw, write, paint and type using a keyboard or touch-screen technology. Understanding the World Talks about past and present events in their own life and in the lives of family members.

Development Matters	Birth to 5 Matters
Early Learning Goal Statutory ELG: Number 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. Statutory ELG: Numerical Patterns 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. Statutory ELG: Building Relationships Children at the expected level of development will: - Work and play cooperatively and take turns with others. Statutory ELG: Managing Self Children at the expected level of development will: - Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Statutory ELG: Listening, Attention and Understanding 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.	

Characteristics of Effective Learning

In planning and guiding what children learn, practitioners must reflect on the different rates at which children are developing and adjust their practice appropriately. Three characteristics of effective teaching and learning are:

- Playing and exploring - children investigate and experience things, and 'have a go'
- Active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
- Creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things

Characteristics children may display which will support future learning in maths

Playing and Exploring	Active Learning	Creating and thinking critically
Development Matters Reach for and accept objects. Make choices and explore different resources and materials. Plan and think ahead about how they will explore or play with objects. Guide their own thinking and actions by talking to themselves while playing. For example, a child doing a jigsaw might whisper under their breath: "Where does that one go? – I need to find the big horse next. Make independent choices. Do things independently that they have been previously taught. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences. that you bring to their attention. Birth to 5 Matters Showing curiosity about objects, events and people. Engaging in open-ended activity. Showing particular interests. Representing their experiences in play. Taking on a role in their play. Acting out experiences with other people. Initiating activities. Seeking challenge. Showing a 'can do' attitude. Taking a risk, engaging in new experiences, and learning by trial and error.	Development Matters Begin to predict sequences because they know routines. For example, they may anticipate lunch when they see the table being set, or get their coat when the door to the outdoor area opens. Begin to correct their mistakes themselves. For example, instead of using increasing force to push a puzzle piece into the slot, they try another piece to see if it will fit. Keep on trying when things are difficult. Birth to 5 Matters Maintaining focus on their activity for a period of time. Showing high levels of involvement, energy, fascination. Persisting with an activity or toward their goal when challenges occur. Showing a belief that more effort or a different approach will pay off, and that their skills can grow and develop (growth mindset). Bouncing back after difficulties. Showing satisfaction in meeting their own goals (I can!). Being proud of how they accomplished something – not just the end result. Enjoying meeting challenges for their own sake rather than external rewards or praise (intrinsic motivation).	Development Matters Sort materials. For example, at tidy-up time, children know how to put different construction materials in separate baskets. Review their progress as they try to achieve a goal. Check how well they are doing. Solve real problems: for example, to share nine strawberries between three friends, they might put one in front of each, then a second, and finally a third. Finally, they might check at the end that everyone has the same number of strawberries. Know more, so feel confident about coming up with their own ideas. Make more links between those ideas. Birth to 5 Matters Playing with possibilities (what if? what else?). Visualising and imagining options. Making links and noticing patterns in their experience. Making predictions. Testing their ideas. Developing ideas of grouping, sequences, cause and effect. Planning, making decisions about how to approach a task, solve a problem and reach a goal. Checking how well their activities are going.

What does Maths look like in Early Years?

'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.' Development Matters

'Effective early mathematics education requires practitioners who:

- Observe, listen to, value and build on children's mathematical ideas and experiences (including with families);
- Include mathematics in interactions with children, drawing attention to mathematics in children's everyday lives;
- Help children seek patterns, make connections and recognise relationships;
- Support children of all ages in creating and solving mathematical problems;
- Ensure provision includes a rich blend of practical activities, stories, songs, rhymes, games and imaginative play as well as graphic tools; with plenty of time for children to revisit, develop and make sense for themselves;
- Maintain children's enthusiasm so children develop positive self-esteem as learners of mathematics and feel confident to express their ideas.' Birth to 5 Matters

What Maths might look like in Early Years, including in Indoor and Outdoor Provision

What you might see children doing	What you should see practitioners doing
• Talking about their daily and weekly routine. • Sequencing events from stories. • Handling money during games and role-play. • Using language connected with sequencing and the passing of time. • Matching shapes to complete inset puzzles and jigsaws. • Exploring capacity/measurement in the water tray. • Weighing and measuring when baking, making playdough and through role-play (for example in a home corner, shop or doctor's surgery). • Recording their mathematical thinking using marks, drawings or numbers. • Following positional/directional instructions to find objects. • Sharing out fruit/ counting items at snack time. • Sorting, counting and classifying collections of objects, including natural resources. • Talking about, comparing and ordering objects by weight or size. • Describing their journey to school. • Using natural and found objects to create pictures, number lines and patterns. • Working with adults in provision who scaffold and extend their learning. • Starting to use mathematical language in context. • Printing repeating patterns in the painting area. • Counting during play in a wide range of different contexts.	• Teaching age appropriate maths knowledge and skills through engaging whole class, group and individual activities and when following a child's lead in provision. • Specifically teaching children how to use any maths equipment, including maths games which are available in provision. • Initiating mathematical discussions throughout the day. • Teaching a wide range of number songs and rhymes. • Exploiting the potential for mathematical teaching and learning through story books. • Providing a wide range of objects for sorting and counting (not just commercially available sorting sets). • Sparking children's interest in maths by linking learning and opportunities to children's interests. • Providing a wide range of construction kits. • Commenting on the size, weight and shape of resources during play and when reading stories, using lots of different vocabulary. • Enabling children to measure and weigh in provision through providing age appropriate resources. • Creating a mathematics rich environment, both indoors and outdoors with mathematical opportunities across different areas of provision using real resources. • Talking about the sequencing of events in stories and through daily routines.

What you might see children doing	What you should see practitioners doing
• Making 3D shapes and structures using various construction kits, malleable materials and junk boxes. • Noticing and naming shapes indoors and outside. • Recording numbers for a purpose linked to the daily routine, for example, how many children want milk. • Singing and making up number rhymes and songs. • Drawing on their developing mathematical knowledge when solving simple problems. • Sharing resources out during role play. • Selecting appropriate mathematical resources to use when solving problems. • Playing maths games indoors and outside. • Transferring their mathematical knowledge to support their learning in other areas. • Demonstrating their breadth of knowledge when given higher level challenges.	• Teaching for mastery of maths. • Instigating practical maths games outdoors, • Modelling and teaching age appropriate mathematical vocabulary. • Referring to numbers displayed at child height within provision during teaching. • Supporting children to mark-mark and record maths pictorially and using numbers (when developmentally appropriate) when solving real-life problems. • Exploring each individual number to 10 in detail with the children. • Pointing out patterns and shapes when exploring the local area and school grounds. • Modelling counting and simple practical addition and subtraction to demonstrate how Maths is often used when solving problems. • Writing numbers in response to children using numbers in play and when solving problems. • Encouraging children to use mathematical language when talking about their constructions, models and pictures. • Teaching children how to use interactive mathematical resources such as number lines, 5 and 10 frames. • Making maths real by exploiting everyday opportunities, including routines, for maths teaching and learning. • Supporting children to make connections in their mathematical learning.

The Curriculum – What we want children to learn (Taken from Development Matters)

The curriculum is a top-level plan of everything the early years setting wants the children to learn.

- Planning to help every child to develop their language is vital.
- The curriculum needs to be ambitious. Careful sequencing will help children to build their learning over time.
- Young children's learning is often driven by their interests. Plans need to be flexible.
- Babies and young children do not develop in a fixed way. Their development is like a spider's web with many strands, not a straight line.
- Depth in early learning is much more important than covering lots of things in a superficial way.

Progression

		Counting	Sequencing	Cardinality	Subitising	Comparison of number	Composition of number
2-year room		Starting to use some number names especially when counting in songs	Shows some awareness of the sequence of daily routine	Gives each object a number name when counting a small number of objects	Distinguishes between 1 and 2 objects	Demonstrates an understanding of 'more' in play and at snack time	With adult support starts to combine and count two small groups of objects
Nursery/ Pre-school							
Reception Class		Counts beyond 10 and back from 10. Knows a range of number rhymes and songs	Sequences events and known stories and talk about past, present and future events	Knows that the number does not change if objects are rearranged	Recognises groups of up to 5 objects without having to count them	Says what is one more and one less and can compare sets of objects	Understands that a number can be made up of 2 or more other numbers

		Sorting	Shape	Pattern	Measure	Problem solving
2-year room		Explores collections of objects and begins to sort objects by sameness	Matches basic shapes and completes basic inset puzzles or shape sorting activities	Can continue a simple pattern of actions e.g. clap, stamp. Starting to show interest in patterns around them	Uses simple words to comment on own size or the size/weight of objects	Starts to solve simple problems with adult support, for example, sharing out snack
Nursery/ Pre-school						
Reception Class		Talks about ways they have chosen to sort collections of objects	Names an increasing number of 2d and 3d shapes and talks about their properties	Recognises, talks about and creates simple patterns	Measures and weighs objects independently using standard and non-standard measures. Can record their results	Draws on mathematical knowledge to solve simple maths challenges independently or cooperatively

Assessment in Early Years

As in the previous version of the EYFS the ELGS are not to be used or envisaged as a curriculum. The EYFS clearly states 'The ELGS are there to support teachers to make a holistic, best-fit judgement about a child's development and their readiness for Year One'. Observation checkpoints are included in Development Matters to support practitioners when considering whether children are on track or if additional support is needed.

'Assessment should not entail prolonged breaks from interaction with children, nor require excessive paperwork. When assessing whether an individual child is at the expected level of development, practitioners should draw on their knowledge of the child and their own expert professional judgement and should not be required to prove this through collection of physical evidence- Statutory Framework for EYFS 2.2' (See document for more information about assessment, including the three statutory assessments in EY).

Useful links

Statutory framework for the Early Years Foundation Stage

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974907/EYFS_framework_-_March_2021.pdf

Development Matters

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/971620/Development_Matters.pdf

Birth to Five Matters

<https://www.birthto5matters.org.uk/#:~:text=%20Birth%20to%205%20Matters%3A%20non-statutory%20guidance%20for%20the,Years%20Coalition%2C%20composed%20of%20the%20following...%20More%20>