Mathematics



An Early Years Curriculum Document

The Lilycroft and St Edmund's Nursery Schools' Federation, Bradford

Mathematics

Maths is very important within ALL young children's lives and learning. We aim to work together with families to help children build firm foundations in the four main areas of mathematics (Spatial Awareness, Shape & Measures, Number, Pattern) so that they become confident thinkers, astute problem solvers and eloquent explainers.

We will ensure that we adapt our maths curriculum in order to meet the diverse needs of all our children and are proactive in planning and implementing inclusive ways to learn and teach that enable and encourage everyone. Everyday experiences and routines, rhymes and games all provide excellent mathematical learning opportunities for young children. Mathematical learning will take place everywhere and will be intrinsically linked to the development of the whole child.

The characteristics of effective learning will support mathematical development as children follow their own innate curiosities and drives to findthings out, keep on trying and persisting even in the face of challenge or difficulties and make predictions and test them to refine their own understanding.

Specific maths teaching and learning opportunities will be regularly planned and should always be hands on, practical and supported by the use of specific vocabulary – there will be a weekly Group Time with a maths focus in 2-3s and 3-4s. What matters most though, is building young children's confidence in maths, their willingness to have a go, talk or communicate in alternative ways about what they notice and discover, and not be afraid to make mistakes.

NB Characteristics of Effective Learning in blue





0-2 Room

Spatial Awareness is developed by:
Providing time and opportunities for babies to explore and experience using their bodies in different ways within a range of contexts. Babies need to: Use all of their available senses to explore the world, reach out, spend time on their tummies, crawl and toddle amongst obstacles, hide inside or under things, move forwards, backwards, side to side and be high in the air and down on the ground. Adults will put words to actions such as 'up, up, up' when lifting a baby from the changing table and describe where a child is such as 'you are under the tree' or 'sitting on the cushion'. We will sing songs such as; 'Up and Down We Go', 'Incey Wincey Spider', 'Wind the Bobbin Up' and play games like Peekaboo – repeating again and again and again!





Engagement with Shape & Measures will be encouraged by:
Providing a wide range of resources such as: blocks, boxes, cups, treasure baskets, fabric, balls, tubes, logs, leaves, stones and other natural resources, to enable children to explore the range of attributes* and characteristics they have. 'It's enormous, it's flat, it's smooth, it's short, it's spotty!'

Ensuring time and opportunities to experience the relationships between objects and materials, how they sit alongside one another or fit together, how they compare, how they are similar or different. This will support children's exploratory play by enabling them to use their bodies and senses to help them understand the world around them.

Babies need to use these resources to: Stack and knock down, empty and fill, roll, post and fit things in, throw, hit, squash and balance, line up, push and pull, which will support growing powers to be able to concentrate and become deeply involved.

Adults will support, commentate on and describe practical discovery and exploration. They will use a wide range of vocabulary associated with shape, size, weight, distance and speed.

*attribute - a quality or feature regarded as a characteristic or inherent part of someone or something. Colour, size, texture are all attributes

Pattern

Learning about pattern will involve lots and lots and lots of repetition, things that happen in sequence, regularly and predictably again and again and again! Plenty of time should be dedicated to this.

Babies experience pattern through predictable and regular routine, making links and noticing patterns in their experience: Nappy changing, Naptime, Mealtimes. Children will be supported to predict what comes next. First we…then… now…

Songs and Rhymes with repeated phrases and actions and a steady beat are perfect for experiencing and joining in with patterns: 'Hello Everyone' 'Here Go Dogs' 'Jack in the Box' and 'Up like a Rocket' Babies need to: clap, stamp, pat, beat, tap, bang, build and knock down - repeating movements and actions again and again and again!

Adults will point out patterns in nature and bring a child's attention to the regularity and sequence of patterns repeating and growing. Adults will build on a child's interests and fascinations – turning repeated actions into games and supporting lots of repetition before trying to move on or change anything. Schematic play is observed, recognised and will support **ALL** children to make meaning as they repeat actions, identify problems and find their own solutions in their own ways.



Number

Experiencing number will also often be a part of routines for babies: When dressing and changing - counting fingers and toes, buttons and poppers, putting one arm in and another arm in.

At mealtimes experiencing indicating and vocalising: more, one more, all gone, one for you, one for me, 2 crackers – 1 in each hand.

Babies also experience number through songs, rhymes and visuals: 'Two Little Dicky Birds', 'Round and Round The Garden, '5 Little Babies'.

Adults will draw a child's attention to numbers of things they can hear, see or feel such as: 'you have 1 shoe on and 1 shoe off' or 'there are 3 cars parked in the street today', 'we have 2 spades, so you can both have one'.



2-3 Room

Spatial Awareness is further developed by: Independent or supported dressing – with one leg in each leg of the trousers and a jumper on the right way round!

More filling and emptying using a range of materials – water, sand, pebbles, pine cones, small toys like cars or people – and also a range of containers, spoon and scoops.

Exploratory play using movement, their bodies and **available** senses is fundamental to each child's learning and understanding.

Children will continue to be fascinated with posting and fitting things in – moving objects around (rotating) to investigate different options.

Adults need to give children time and encouragement, using words and signs to explain but delay physically modelling in favour of encouraging independence and persistence.

We will model responding positively when things go wrong, and talk about learning from failure.

Playing games involving climbing, wheeling, running, jumping, hiding – simple obstacle courses and a range of spaces to fit inside and squeeze through.

Adults will use positional language (in, on, inside, up, down, over) accompanied by gesture, to support children's understanding.

Ball games with a range of balls and bats will be facilitated and supported by adults to enable children to experience cause and effect and develop body awareness and visualisation skills alongside ideas of cause and effect.

Finding things that are hidden and hiding themselves! Children will be encouraged to explore, follow their interests and think for themselves.

At tidy up time children will be encouraged to join in and adults will provide commentary promoting logic and reasoning about where things fit or are kept.

Shape and Measures

A range of resources will be available to build with and knock down, make, move, arrange and compare - including things that may be heavy or awkward and provide challenge to children. Adults will encourage exploration by talking and signing about what the child is doing and wonder about what might happen "I can see you have built a tall tower. Now you are putting a flat brick on top of a pointy brick – I wonder if it will balance?"

Children's efforts and ideas are respected, so they feel safe to take risks with new ideas and feel comfortable with mistakes.

Inset puzzles and posting activities, alongside simple jigsaws continue to be interesting and challenging to children at this age and they may now begin to select a shape or piece purposefully, as well as using trial and error.

As children experience a range of shapes in practical situations, adults will use informal language alongside shape names and mathematical terms to describe and compare (tiny, pointy, wiggly, empty, square, cylinder, curved, long, heavier, parallel).

Actions will be used to support descriptions and aid understanding.

Comparing, matching and sorting are often evolving interests of many children at this age – adults may comment: 'I can see you have put all the yellow blocks together' 'I wonder if you can find any that are exactly the same?'

Pattern

Children will enjoy using their bodies to join in with the actions to repeating songs and rhymes sometimes just keeping the beat and sometimes using specific sequences: ‘Hello Everyone’, ‘Heads, Shoulders, Knees and Toes’, ‘If You’re Happy and You Know it’, ‘Clap Your Hands and Stamp Your Feet’

Reading simple stories with repeating and predictable patterns e.g. ‘Brown Bear, Brown Bear’, ‘Dear Zoo’ is important at this age. Adults will leave gaps so that children can join in and predict what comes next.

Children will be made aware of the pattern and sequence in daily routines – pictures, signing and modelling will support spoken instructions; ‘first we wash our hands', 'next we sit down', 'then we chose our drink', 'finally we choose our snack’.

For some children, their learning will be further supported by activities with a very specific order such as 'basket work' or 'objects of reference' that they will be supported to complete each session. Timetable? There will be time to repeat experiences again and again and again and adults will draw children’s attention to this repetition enabling them to make links and notice patterns in their experiences.

‘Shall we do it again?’ ‘Let’s do it lots of times again and again and again!’ ‘I can see that you are adding another block and another and another’. .



As children develop their schematic play adults will continue to observe and facilitate, giving children time to explore, follow their interests and think for themselves

Patterns in nature and in the environment and from a range of cultures will be pointed out, photographed, displayed and described by adults using every day and mathematical language ‘there are lots and lots of bricks in straight rows’, ‘the tiger and the zebra both have stripes’, ‘can you see anyone else with a spotty dress on today?’ ‘I notice that there is a blue, then a red and again blue, red, blue, red, blue red.

The pattern repeats again and again and again!’



Numbers

Children will hear and use words and other methods of communication to describe amounts – more, lots, a few, just one, not enough.

Children need to be involved in problem solving, testing their ideas and finding the right number of things for a purpose i.e. at snack time – 2 pieces for you, 2 pieces for you, 2 pieces for you. Every child needs 1 plate and 1 cup. You have taken too many, please put 1 back.
It is important to children to make things fair!

Children will experience and begin to use numbers through songs and rhymes: '1,2,3,4,5 Once I Caught a Fish Alive', 'Two Little Dicky Birds' 'Five Little Babies'

We will begin to use finger numbers (for those for whom this is not possible we will use alternative body parts or additional resources) children need lots of practise putting fingers up and down. They may sometimes hold up the right number of fingers but say the wrong number.



Children can naturally recognise small numbers of objects (1-3) without counting them individually – subitising. Adults will draw children's attention to how many of things there are – 'there are 3 chairs at the table' and begin to encourage children to say what they see, without counting as this is often an easier and a more efficient method.

We will also involving children in counting small numbers of objects during everyday activities – steps, buttons, biscuits, apples – adults should emphasise the last number said and make it clear that this is the number of objects that we have '1,2,3 (3 slightly louder), we have 3 apples'.

Children's attention will be drawn to numbers used as labels such as 'we live a number 4', ' we are catching the number 83 bus' and there will be a natural focus on the numbers 2 and 3 as children take ownership of 'my number' – their age.



3-4 Room

Spatial Awareness

Block play continues to be important and experienced builders will be challenged and supported to create more complex constructions including bridges and enclosures. Puzzles of increasing complexity (including tangram puzzles) will be provided.

Perseverance will be encouraged and strategies taught such as finding edge pieces, hovering pieces and rotating pieces to fit.

The language of position and direction will be used in treasure hunts and obstacle courses, games such as 'Robots' where children give and follow instructions, and also whilst planning and taking part in journeys.

Adults will draw attention to different viewpoints and how this changes how things appear i.e. things look smaller if you are far away or very high up, supporting children to think for themselves and talk with others, sharing and developing ideas together.



Shape and Measures

Children and adults will use lots of different words or other forms of communication to describe shape and size; informal language 'slanty, pointy, flatish, massive, teeny', mathematical terms and shape names 'circle, cuboid, polygon, width, circumference' and to describe nearly shapes 'it's almost a square but it's got curves instead of pointy corners'. The language of description and comparison is also important and children will be supported and encouraged to explain why they have made particular choices when sorting and classifying. 'I wonder why these toys are together in a group?'

Shapes will be used together to create new shapes, pictures, models, dens and patterns – sometimes following instructions or plans and always using words and actions to share ideas, plan and solve problems. Adults will describe and model playing with possibilities, discussing why they have chosen a particular shape for a purpose i.e. 'I am going to use this triangular prism for a roof because it has a point at the top like the roof in this picture, and it slants down' and also to model thinking 'mmm, I wonder what will make a good door? It needs to fit into this space and it needs to open and close.' *

Shapes will be partitioned in different ways i.e. cutting a cylindrical cucumber into circular pieces, and also, put back together to remake the original shape or a different arrangement i.e. cutting a square sandwich into 4 triangles, then putting them back together on the plate in a square or like a row of mountains.

Meaningful opportunities will be sought and also planned, for children to compare weight, length, capacity and time – what/who is the heaviest/lightest, fastest/slowest, holds more/less, is the taller/shorter? Objects, stories and pictures can be sequenced in order of occurrence (events or times) or by increasing/decreasing size, weight, length or capacity.

*NB: language will always be pitched at the right level for the individual child

Pattern

Children will know and be able to explain that patterns happen again and again and again! They will join in with and create their own body patterns, using a range of movements and sounds.

They will sing and sign songs, chant rhymes and join in with stories with repeated, predictable refrains.

Patterns of time; days of the week, routines of the day, seasons of the year, growing up etc. that make up the rhythms of life, will be regularly referred to and discussed with children, who will be encouraged to spot regularity or predict what will come next.

Children will become ‘pattern spotters’, seeking out the regularity, repetition or growth that signify the patterns that exist in nature, our built environment, our different cultures and in maths.



We will encourage children to create their own patterns in a range of different ways, using different materials, themselves or a combination of these – natural resources like sticks and stones, collage, making marks in paint, sand or clay or drawing with a pen or pencil, dancing, moving and singing, building with blocks, lining things up or arranging them in other regular ways. We will document and display these patterns and use many interesting words to describe them.



Repeating patterns will be explored with adult support and children will be introduced to ABC and AABB, ABB patterns as well as ABAB. Adults will model and the children will have a go at continuing these patterns, then making up their own. Children will be shown how to describe their pattern and learn how to plan and explain the rule of their pattern. Eventually we hope that some children will be able to represent their pattern in a different way – ‘red, red, blue, red, red, blue’ becomes ‘jump, jump, clap, jump, jump clap’.

Number

Children will use numbers in their play more often and alongside adults who maximise purposeful and teachable moments, a number rich environment will support this i.e. numbers on bikes and parking bays, a list of phone numbers in the Home Corner.

Children's mathematical representations will be valued and encouraged as part of their pretend play but also as a means to keep score or record who would like what for snack.

Children at this age may enjoy reciting numbers as high as they can go and may also have a fascination with big numbers, these interests should be encouraged but not interpreted as a real understanding of bigger numbers, which will come later.

Children will begin to recognise numerals of personal significance such as their age or their house number and also numerals 0-5.

Numerals, as well as dots, subitising patterns and numicon symbols will be used for a purpose in the Nursery classroom to signify things like; how many pencils in a pot or cars in a basket.

Where possible, children will be supported and encouraged to use 'finger numbers' often, they need to be able to utilise their fingers (or an alternative) as a resource to support their mathematical thinking and understanding, so time and continued effort needs to be dedicated to practising the skill of putting fingers up and down.

Children will represent numbers in different ways using fingers on one or both hands, putting up or down one finger at a time, using fingers to add two small numbers together and also to count on. Fingers will be used whilst singing songs '1,2,3,4,5 Once I Caught a Fish Alive' '5 little Ducks' and also when working things out in the absence of real objects 'If I had 2 boys and 2 girls – how many children altogether?'

Through games, labelling, questioning and practise – children will be able to recognise (by sight or feel) small numbers of objects (1-3) without counting them individually – **subitising.**

Children will know, through experience, that numbers can be represented in lots of different ways and we will use resources such as numicon, double sided counters and five frames to support their understanding.

As well as being able to tell us what or how many they see or feel, children will be encouraged to tell us how they know this, sharing their thoughts and developing ideas together.

Different ways of thinking are embraced and misconceptions are used to aid teaching and learning.

We will encourage open-ended thinking and always wonder what else might be possible? Counting objects accurately is within the capability of more children at this age.



Adults will support children to ‘tag’ (reliably point/touch each item) and to say one number for each item using the stable order of 1, 2, 3, 4, 5 first, then later for some, to 10. When counting objects with children, adults should also emphasise the cardinal principle – that the last number said is the amount that we have counted so far ‘1,2,**3** - there are **three** cups’



Children will also be invited to count out a number of objects from a larger group ‘we need a plate for everyone, please take three from the pile.’

The one more and one less pattern of counting will be emphasised through stories, songs and rhymes and children will be asked to predict which number comes next, beginning to recognise that each counting number is 1 more or 1 less than the next.

Children will, in practical situations compare two small groups of objects saying whether they are the same or if one group has more or fewer – ‘who has more - me or you? How do you know?’ With the support of adults and in playful and/or meaningful and practical contexts, children will also begin to explore that numbers are made up of (composed of) smaller numbers



‘There are 4 children on our camping trip, 2 are in the tent and 2 are outside the tent. If someone else goes inside the tent that means there are 3 in and 1 out, I wonder if there are still 4 children altogether?’’ Through different scenarios, we will present children with a range of problems for them to solve.

We will support resilience by helping children to develop a view that not getting the result they (or others) wanted or were expecting is not a failure, but an opportunity to try again, learn and develop.

Mistakes in maths, just like in all other areas of the curriculum, are good – they help us to think, understand and learn.

Family Maths

Young children rely on their families to help guide their learning about the world around them. But we also know that families often need some support too.

As professionals who work with families with young children, we have an important role to play in promoting positive engagement with early maths. All too often, adults do not see themselves as confident mathematicians which causes them to shy away from maths altogether.

We will support families to understand that maths is important and that maths is fun! We will show them that maths is everywhere and part of all the everyday things that they already do with their children like shopping, getting dressed and making dinner.

Maths is about talking; describing things that you do and see, making comparisons and spotting patterns as well as counting and using number words to say how many, more or less. We will instill in families as well as children that maths is not about getting the right answer. Maths is about problem solving, trying things out, making mistakes and working it out together!



Ideas and Resources

We have developed a Family Maths leaflet that explains why maths is so important, how it is part of everyday life, playing, talking and having fun! It outlines the four main areas of early maths; Spatial Awareness, Shape & Measures, Number and Pattern and gives suggestions as to how these can be developed through simple, enjoyable experiences.

There is also a Family Maths section in 'Playing and Learning at Home' on our school websites, with lots more ideas and suggestions. Of course - maths learning will not happen seperately to other learning and the perfect way for families to find ideas to support 'whole child' development is **50 Things to do Before You're Five.** You will be certain to find some maths in every single one of them but a few that are particulary mathematical are:

#5 Squidgy Sand
#11 Making Connections
#24 Hop, Skip, Jump
#25 Creative Junk
#26 Splish, Splash, Splosh
#30 Yummy Picnic
#47 Great Bradford Baking
#48 Natural Art

We will invite families in to Nursery often, to play and learn with their children, at events such as Better Together Day and Maths Fun Day but also every day.

So that we can build the trusting and respectful relationships that we know are so important if we are to work together in partnership to succesfully care for and educate our children

Ofsted Outstanding Provider

Ofsted

Read our report

WEBSITE

REVIEWS ★ ★ ★ ★ ★

Absolute fantastic nursery school! Teachers and staff are very supportive, friendly and always their for parents and children. They provide fun activities indoors and outdoors. My son really enjoyed it here and it has build his confidence. Cant wait to put my daughter in nusery next Sept.
Thankyou for everything x

This place is amazing, so inviting from the moment you walk down the street. Staff are lovely and friendly. The children are happy and smiling. The provision and activities are well thought through and educational. The children are learning all the time. Outdoor activity is ongoing in all weathers and staff never complain!
So many opportunities for parents to join in various activities. I love this place. And so does my son! 😊

50 things to do before you're five™

Scan the QR code below to view all activities

Last Reviewed: 27th Maj 2026
Approved By: Sian Hudson - Executive Headteacher
Next Review Due: 28th May 2029