**Birchfield Nursery School Progression in Maths**

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| **INTENT:** |
| Mathematics plays a key role in a child’s early development. Very young children are naturally curious, noticing differences in quantity and the shape of objects, and using early mathematical concepts when they play. At Birchfield Nursery we believe children should love numbers and everything that comes along with them. We want our children to have a growing confidence and develop a deepened knowledge within number, having the opportunity to see it and use it in every way possible. It is essential in our curriculum that all children are given the same opportunities and exposure to a breadth of mathematics. They are exposed to a variety of experiences, texts and opportunities to ensure they have a deepened embedded knowledge before they start the next stage of their educational journey. |
| **IMPLEMENTATION** |
| **0-3 years** | **EYFS Framework** | **How will we help children to learn** | **Mathematics resources** |
| Number | * Take part in finger rhymes with numbers
* 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’
 | * Children receive a 3 times weekly mathematics focused session.
* Children receive a daily diet of number rhymes and songs. Rhymes are used frequently throughout the day as part of our daily routine. E.g. days of the week, months of the year, weather, let’s make a circle, everybody line up.
* Children are encouraged to count in everyday contexts. E.g. how many children are in, snack opportunities, baking, role play, construction, sand & water.
* Parents are made aware of encouraged to share favourite number songs and rhymes with children during transitions and via tapestry.
* Sessions are kept lively, short and interactive. A wide variety of resources including concrete resources e.g. elephants, ducks, currant buns, counting bears, visual aids, puppets, images.
* Resources are clearly linked to the developing needs of the children i.e. number rhyme sets, concrete resources, simple number stories,
* Children participate in clearly planned, sequential numbers sessions that are based upon children’s development needs.
* There is a clear focus upon developing early mathematical vocabulary in order to name and describe simple objects.
* Children are encouraged from early on to use fingers to represent numbers up to five.
* Children are modelled to frequently how to represent numbers in a variety of ways. Mirrored resources are then available for children to explore numerical mark making.
 | * Number rhyme books
* Action songs
* Clapping games
* Board books and lift the flap books
* Simple counting stories e.g. one mole digging a hole
* Counting elephants
* Counting bears
* Number rhyme resources
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| Numerical Patterns | * Combine objects like stacking blocks and cups.
* Put objects inside others and take them out again.
* React to changes of amount in a group of up to three items.
* Compare amounts saying ‘lots, ‘more’ or ‘same’.
* Climb and squeezing selves into different types of spaces.
* 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.
 | * The children are given frequent opportunities during adult led and child initiated play to sort collections into groups that are the same colour, size and shape.
* There are a variety of resources available for children to explore and develop their interests and knowledge around shape and pattern. e.g. construction, threading, painting, craft.
* Sensory and messy play (sand/water/playdough/mud kitchen/outdoor water/messy play) is available for children to explore comparatives such as capacity and weigh. Adults model mathematical vocabulary in these areas.
* Vocabulary sheets are available in areas to support practitioners (students/new staff)
* The environment is labelled with pictures, shadows and print for the children to tidy away in put everything back into its correct place.
* During adult led sessions children will begin to understand that if they add something to a collection they have more and that if they take something away they have less.(addition songs – one elephant/subtraction songs – currant buns)
 | * Larger 2D shapes
* Construction area
* Jigsaws
* Counting bears
* Elephants
* Sand & water (variety of containers and measuring equipment)
* Threading
* Craft materials
* Number songs resources.
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| 3-4 years |  |  |  |
| Number | * 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.
* Experiment with their own symbols and marks as well as numerals.
* Solve real world mathematical problems with numbers up to 5.
 | * Quality first teaching sessions happen 3 times a week based upon the early maths fluency programme.
* Starting from Autumn 2 children explore a number week from 0-10.
* Children develop an understanding that numbers can be represented in a variety of different ways.
* Staff have their own high quality number bags which are used weekly to provide resources for their number sessions, linked to the number of the week: This includes; number line, number card, tens frame, clock, numicon, dice, shape, counting objects, money, number rhyme, shape, multilink, ruler.
* There is a high priority focus given to teaching children how to touch count correctly using clear and careful one to one correspondence.
* Children then use this understanding to develop their knowledge around cardinality.
* Children have number warm ups prior to each session (see warm up activities)
* During focused activities and continuous provision children are encouraged to practise, consolidate and extend their learning from their adult led sessions.
* Tuff spot trays using resources similar to those in the number bags are provided from early on to build on prior learning.
* Children are modelled how to represent and record numbers in a variety of ways and are encouraged to do this independently.
* From early on children are involved in voting and recording information on a tally chart linked to our LCC. Resources are then provided for children to conduct their own surveys.
* Real world mathematical situations are solved in context with children e.g. have we got enough chairs? Is there enough snack for everybody? How many cups will we fill from this jug?
* Baking activities
* Number hunts with checklists.
* Children are set challenges through tapestry to complete with parents at home, consolidating knowledge from nursery.
 | * Number bags (see inventory)
* Number puppies 1-10
* Mark making materials (clip boards, pens, tally sheets, tens frames, number lines horizontal and vertical)
* Role play equipment
* Number warm up sheet
* multilink
* Candles/buttons/cotton reels/lollypop sticks (playdough)
* Playdough area
* Tuff spot trays – mixture of maths resources to build and extend prior knowledge.
* Number games
* Dominoes
* Bingo
* Number burglar
* Jack Hartmann songs
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| Numerical patterns | * Compare quantities using language ‘more than’ ‘fewer than’
* Talk about and explore 2D and 3D shapes using informal and mathematical language such as sides, corners, straight, flat and round.
* Understand position through words alone 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)
* Combine shapes to make new ones.
* Talk about and identify the patterns around them. For example stripes on clothes.
* Use informal language like ‘pointy’, ‘spotty’, and ‘blobs’
* Begin to describe a sequence of events, real or fictional, using words such as first, then.
 | * Children have opportunities to compare quantities in real life situations and during adult sessions where there are opportunities to extend thinking. Language of ‘more than’ and ‘fewer than’ is taught explicitly so children have an understanding of what it means first.
* 2D and 3D shapes are explored during continuous provision where children have opportunities to build and create with different shapes. (in construction, junk modelling, outdoors)
* Children go on shape hunts around the environment to see if they 2D or 3D shapes and tick of corresponding shapes on sheets.
* Children can be inspired by books and real life architecture around construction and link to use shapes appropriately. e.g. a triangular shape for a roof.
* Adult led sessions are focused around 2D and 3D shape to teach children the differences when working with these shapes and correct vocabulary is introduced when describing. (see vocab sheet)
* Children explore positional language through story and movement indoors and outdoors. E.g. re-enacting were going on a bear hunt.
* Adult led sessions focus on providing opportunities for children to explore and compare size, length, weight and capacity. Children explore these in a practical way using resources that are available in continuous provision. (weighing scales, rulers, tape measures, multilink) it is modelled how to use these in real life situations.
* Adult led sessions build on children’s prior pattern knowledge and teach them about repeating patterns and patterns we can see out in the environment.
* Children discuss the sequence of events through day to day occurrences and through story looking at ‘first’ ‘then’
* Children learn to follow a series of simple instructions to develop independence i.e. the coat trick, washing hands, waterproofs, wellies.
* Children are set challenges through tapestry to complete with parents at home, consolidating knowledge from nursery. e.g. creating own patterns, sequencing how they get ready for nursery, ordering lengths etc.
* Children get involved in lots of outdoor games to encourage their understanding of number: e.g. what’s the time Mr wolf, hopscotch, skittles.
 | * Books linked to position language and routes. E.g. Rosie’s walk, red riding hood, where’s spot?, were going on a bear hunt.
* 2D shapes
* 3D shapes
* Number bags
* Construction books
* Scales
* Rulers, tape measures
* Measuring containers
* Pattern sheets
* Counting bears
* Craft materials
* Junk modelling
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| 4-5 years |  |  |  |
| Numbers | * Count objects, actions and sounds.
* Link the number symbol (numeral) with its cardinal number value.
* Count beyond 10
* Compare numbers
* Understand ‘one more than/one less than’ relationship between consecutive numbers.
* Explore the composition of numbers to 10.
 | * Adult led sessions show children what they can now do with numbers between 0-10 and how they can be explored and knowledge is deepened within each number.
* Children are given countless opportunities to count and reinforce their understanding around number and that anything can be counted.
* Children develop an understanding that the total remains the same regardless of the arrangement.
* Children will begin to count beyond ten during everyday contexts. (counting a total of children, items)
* Comparison is taught to children during adult led sessions along with providing opportunities for children to think of their own ideas on frequent occasions.
* Adult led sessions teach children about ‘one more than’ and ‘one less than’ Children explore this in practical ways to see how when they add one the number gets bigger and when they take one away the number gets smaller.
* Adults provide opportunities to develop children knowledge around using five and tens frames. Children use these when counting out objects and adults discuss how many empty spaces there are on the frame as this supports children’s developing awareness of number bonds.
* Adult led sessions teach children about the composition of numbers between 2-6 and how these numbers can be made up in a variety of ways. Children explore these using concrete materials like numicon to see the different configurations.
* A key role of the adult is to encourage children to begin to talk about their mathematical thinking i.e how do you know? What do you notice? What strategies did you use?
 | * Number bags
* Counting items
* Number cards
* 100 squares
* Number lines
* Numicon
* Tens frames
* Five frames
* Number games
* Dominoes
* Bingo
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| Numerical patterns | * 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 the children recognise that a shape can have other shapes within it just as numbers can.
* Continue copy and create repeating patterns.
* Compare length, weight and capacity.
 | * Children build on their prior pattern knowledge by creating ABABAB patterns or extending this to AABBAABB patterns.
* Children learn to continue a repeating pattern by carrying on what they can see. They are encouraged to explain their answers, give reasons and say “the pattern is…”
* Adult led sessions teach children how to compare different lengths, weights and capacity. Resources are provided to support learning and children are modelled how to do measure with these correctly.
* Shapes are continually available for children to explore and look at the different ways different shapes can be created using other shapes.
* Transitional art provides opportunities for children rotate, manipulate and to see how shapes can be used to represent different images as well as to create patterns with.
 | * Pattern pictures
* Counting bears
* Multilink
* Different weighted materials (stone, feather, cork, pinecone, brick etc)
* Rulers/tape measures
* Transitional art materials
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| **IMPACT****How will we know that our intent has been effectively implemented and achieved?** |
| A love of mathematics and enjoyment for number can be seen and felt all around schoolChildren feel confident to take risks, make mistakes and build on their own learning.The floor book reflects on the breadth of opportunities and learning that has taken place.Children are able to talk confidently about what they are doing and how they are doing it.Resources are used to their full potentialTapestry observations and regular scrutiny by SLT reflect the wealth and breadth of different mathematical opportunities across the curriculum Parents engage fully in their child’s mathematical journey and see the valuable role they play in promoting a love of maths.Assessment of mathematics is closely linked to next steps for each child Most children leave nursery ‘on track’ in 3-4 years development band |