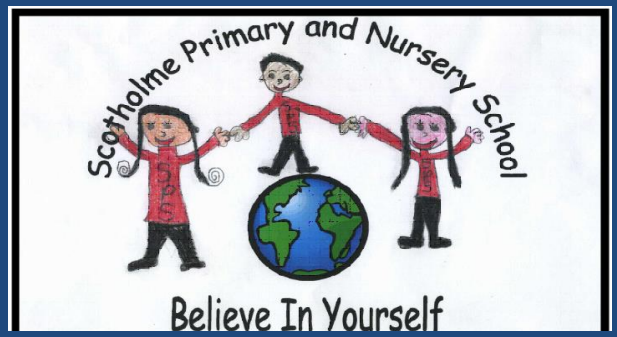

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Mathematics Curriculum 2022 - 2023

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CONTENTS

RATIONALE

This maths curriculum has been designed to effectively meet the aims and objectives of the early learning goals set out in the Development matters document. It incorporates more time for children to develop fluency through the teaching and learning of the six key areas of early mathematic learning.

- Cardinality and Counting
- Comparison
- Composition
- Pattern
- Shape and space
- Measures (*See appendix A for further detail)*

Allowing more time for children to develop skills through the use of 'small steps,' will allow children to develop a deeper understanding of numbers which will progress their fluency further, thus giving them the opportunity to demonstrate their knowledge of mathematics through a range of problems. Children will be able to connect mathematics in everything they do, both across the rest of the curriculum in school and in the wider world through this curriculum that embeds mathematical thinking and talk.

Lessons are crafted with care and are perfected over time with input from other teachers, drawing on evidence from careful observations of all pupils in each class. Professional judgement will be used to determine how long should be spent on each step.

Teaching structure.

Children will be given a group input before moving onto appropriate tasks, planned for using continuous provision. Each child will experience an adult-led continuous provision group once a week. Extra adults will be used to support and address misconceptions.

Lesson designs are set out in detail and use well-tested methods to teach each mathematical topic. They include a variety of representations, which are essential to introduce and explore concepts effectively and set out related teacher explanations and questions to pupils.

All lessons will contain: a range of representations; variation; stem sentences; coherence; fluency; differentiation; careful choices and the opportunity to dive deeper for all (Dong Nao Jin).

YEARLY PLAN

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Autumn	**Number:** counting and exploring. **Getting to know the children. Setting routines using propositional language.**			**Number:** Matching and sorting. **Shape:** making patterns and comparing.			**Numbers:** 1-3. Representing, comparing and composition. **Shape:** circles and triangles			**Numbers:** Representing numbers to 5. One more and one less. **Shape:** rectangles and squares.		
Spring	**Number:** Introducing 0. Comparing numbers to 5. Composition of 4 and 5. **Shape:** Compare mass and capacity.			**Number:** 6, 7, 8. Making Pairs and combining two groups. **Shape:** Length and height. Time				**Number:** 9, 10. Comparing numbers to 10. Number bonds to 10. **Shape:** 3D shape and patterns.				**Consolidation.**
Summer	**Number:** Building numbers and counting patterns beyond 10. (To 20) **Spatial reasoning:** Match, rotate and manipulate.			**Number:** Adding and taking away. **Spatial reasoning:** Compose and decompose.			**Number:** Doubling, sharing, and grouping. Odd and Even numbers. **Spatial reasoning:** Visualise and build.			**Number:** Deepen understanding. Patterns and relationships. **Spatial reasoning:** Mapping.		

HEURISTICS TO FOCUS ON DURING THE YEAR:

Draw Something Play and exploring Act it out

LINKS TO MASTERY MATERIALS

https://www.ncetm.org.uk/in-the-classroom/early-years/

https://nrich.maths.org/13371

https://whiterosemaths.com/resources/early-years-resources/reception-sol/

TERMLY PLANS

Teachers to incorporate Number blocks into Math's lessons where appropriate, using the supporting NCETM guidance.

* = Opportunity to dive deeper.

AUTUMN SMALL STEPS

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Number: Counting and exploring. • Counting forwards and backwards in sequence. • represent numbers. • Exploring numbers **Getting to know the children: Proposition** • Establish routines and key points of the day. • prepositional language.			**Number: Matching and sorting.** • Matching objects that are the same. • Sorting objects by colour, shape or size. **Shape: Pattern and comparing.** • Compare amounts. • Compare size, mass and capacity. • Making patterns.			**Numbers: 1-3.** • Representing 1,2,3. • Comparing 1,2,3. • Composition 1,2,3 **Shape: Circles and triangles.** • Recognising circles have 1 curved side. • Recognising circles in the world. • Recognising triangles have 3 straight sides. • Recognising triangles in the world.			**Numbers: 1-5.** • Count to 4. • Recognise and represent 4. • Subitise 4 • Count to 5. • Recognise and represent 5. • Subitise 5 • One more and one less. **Shape: Rectangles and squares.** • Recognise squares have 4 equal sides. • Recognising squares in the world. • Recognise rectangles have 4 sides. • Recognising rectangles in the world.		

AUTUMN ACTIVITIES

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Number: Counting and exploring. Counting objects in continuous provision. Mark making to represent numbers. Exploring maths resources. NRICH: **Show me** NRICH: **Counting collections** NRICH: **Number talks** **Getting to know the children: Preposition and routines.** Exploring continuous provision. Where do things belong? Moving the class teddy around and describing the position. Small world. Where is the tree? Etc Treasure hunt. Sort daytime and night-time activities. Visual timetable. NRICH: **Obstacle course** NRICH: **Position with wellies** NRICH: **Calendar muddle**			**Number: Matching and sorting.** Snap games. Numicon shapes. Matching lids to the correct bottles. Building matching towers. Which one does not belong? * Tidy up time. Discuss sorting and belonging. Finger gym. Sorting beads. Guess my rule. * NRICH: **Baskets** **Shape: Pattern and comparing.** Sorting objects into 5 frames to compare more/less. Playdough. Sharing amounts. Who can build the tallest tower? Different sized balls, which group has more? (2 large balls and 5 small) * mystery box. What is inside? What could fit?* Create appropriate sized house for mouse, cat etc. Sand and water table. How many scoops until bucket is full? Balance scales. Feely bag. Describe size. Can you feel something bigger? Copy, create and continue AB patterns. Spot my mistake. *			**Number: 1,2,3.** identify representations of 1,2,3. Subitising dice patterns. 1:1 correspondence for counting. Make 1,2,3 using a range of objects. Mark making 1,2,3. Counting out 3 from a bigger group. Count sounds and movement. (Claps) Matching cards. (Collect all the cards that show 2.) Using objects discuss using more/fewer. Find an object with more/less * Objects to show one more/less. - (Introduction to step squad). Role play. 3 little bears. Small world using 2 fields and 3 animals. How many can go into each field? Numicon to make 3 in different ways. Hidden objects. Start with 3 and hide some, children guess how many have hidden. * NRICH: **Hidden gems** NRICH: **Counting collections** NRICH: **Number talks**			**Numbers to 5.** Activities for 1,2,3 can be adapted for 4 and 5. (Including NRICH) Parking Bay for 2 wheels, 3 wheels and 4 wheels. Small world, identify animals with 2 legs and 4 legs. Children to know that a full 5 frame is 5. Putting correct number of objects into buckets labelled with a number. Birthday cards. How many ways can you connect 5 multilink blocks? Stampoline prints. One more and one less on a 5 frame. Bus route. Count how many children get on the bus. How many when one gets off? Numbers in order. Which is missing? * Predict how many if I took one away? * NRICH: **Dice** NRICH: **Golden beans**		

Stories: and songs The bear in the cave. Michael Rosen Clean up everybody. Stacey Sparks One, two buckle my shoe. 10 green bottles. Days of the week song	NRICH: **Presents** NRICH: **Mud kitchen** NRICH: **Sock washing line** **Stories and songs** Monkey puzzle- Julia Donaldson. Noah's ark. Animals came in 2 by 2. A new house for mouse- Petr Horacek In and out the dusty bluebells. Song and dance patterns. (Clap, stomp) Bear hunt- Michael Rosen	**Shape: Circles and triangles.** Investigate shapes. Notice and wonder If I turn the shape does the shape change? * Shape walks Printing. Collage Stick pictures. Press shapes into dough. Bottle lids, beads etc. NRICH: **String circles and triangles** NRICH: **Shape feely bag** **Stories and songs.** 1,2,3 at the zoo. Eric Carle. Three little firefighter. Stuart J Murphy. My hat it has 3 corners song. Mr Men books.	**Shape: Squares and rectangles.** Activities for circles and triangles can be adapted for squares and rectangles. (Including NRICH) Creating houses using boxes and shapes. Using multilink to create shape. Investigate which shapes they can make by combining circles, triangles, squares, and rectangles. * NRICH: **Making a picture** **Stories and songs:** Kipper's Birthday- Mick Inkpen. Witches four- Marc Brown. Five little men in a flying saucer. A bear in a square- Stella Blackstone. Round is a mooncake- Roseanne Thong. I am a shape- Mister maker.

SPRING SMALL STEPS

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11
Number: 0-5 • Introducing 0 • Comparing numbers to 5 • Composition of 4 and 5. **Measures:** • Comparing mass • Comparing capacity			**Number:** • Representing numbers 6, 7 and 8 • Making pairs • Combining 2 groups. **Measures** • Length and height • Time.				**Number** • Representing numbers 9 & 10. • Comparing numbers to 10. • Number bonds to 10. **Shape** • 3D shape. • Patterns			

SPRING ACTIVITIES

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11
Number Count backwards on a 5 frame to songs and rhymes until it shows 0. Providing examples of contrasting pictures, have children talk through what they can see. (a tree with 3 apples compared to a tree with no apples). Show me games. (Show me 2 fingers, show me 0 fingers/ show me 3 jumps, show me 0 jumps, show me more/less than 3). Games for children to record their score such as bowling. What time is it Mr wolf with number cards 0-5. Matching cards to show quantity to numerals. Comparing and contrast the amounts. Sharing out objects within a group. Discussing how many each child has, are they the same? Who has more/less? * Using picture cards with dice patterns on, find the number 4. Find a number less/more than 4. Use part whole models/ hula hoops to split 4/5 in different ways. Use double sided counters to split 4/5 on 5 frames in different ways or split a tower of 4/5 cubes. Using numicon to find smaller numicon that fit on top of 4 or 5. How many are hidden? (5 altogether, there are two in my hand, how many do you think are in the bucket?) * **NRICH:** The voting station			**Number** Making ladybird patterns using 6 dots in different ways. Showing 6, 7 and 8 in different ways with different resources. Look at the number of legs on minibeasts. Count and. Compare. Matching games. Sorting socks into pairs. Noah's ark set up in the small world with pairs of animals. Comparing 5-wise and pair-wise patterns on 10 frames showing the same number. * Using part-part whole to show the composition of number. Asking 'how many e.g., animals altogether?' during small world play. Combining numicon to make a bigger number. Children count the dots on dice and dominos altogether. **NRICH:** Double trouble **NRICH:** Sock washing line **Measures:** Threading lengths of beads. Building tall towers. Compare using ribbon, compare snakes and other classroom items. Put them in order. Explore building roads and bridges and discuss. Push a car along, measure who travelled the furthest. Use playdough to make snakes. Compare lengths. Order events using key time words. Talk and experiment with tasks, how long do they take? Which task takes the longest? *				**Number** Counting, forwards and backwards to 10. Representing 9 & 10. Ordering numbers to 10. Challenge by asking them to find the missing number in the sequence. * Matching concrete to pictorial. Use bottles to play '10 green bottles' Use cubes/ bricks to create 'step squads' to 10. Estimate amount and then place on 10 frame to check. * Use Numicon, double sided counters and Rekenreks to find bonds to 10. **NRICH:** Pirate Poundland **NRICH:** Estimation station **Shape** Exploring shape. Building towers and rolling shapes. make their own 3D shapes. Introduce names and discuss similarities/ differences. (sorting) Finding 3D shapes in the environment on a shape walk. Printing using 3d shapes. Box modelling buildings/ cars/ bridges etc. Movement patterns. Describing and recreating patterns. Spot the mistake in the pattern. * Creating patterns outdoors with leaves etc. Using Pegboards to make patterns.			

NRICH: Hidden jewels **Measures:** Estimate by holding: Lighter/heavier Use balance scales. Challenge to find items that are heavier/lighter. * Weighing balls of playdough. Weighing food parcels in role play shop. Use sand and water trays to make full, half full and empty. Experiment with different sized containers. **NRICH:** Mud Kitchen **NRICH:** Water, water **NRICH:** Presents **Stories and rhymes** None the number- Oliver Jeffers. Balancing act- Ellen Stoll Walsh The ugly five- Julia Donaldson A beach for Albert- Eleanor May Alice the camel song. Five little monkeys swinging in the tree The whole of me- Number blocks	**NRICH:** Long creatures **NRICH:** Timing **NRICH:** Beat the clock **Stories and rhymes.** Kipper's toybox- Mick Inkpen Simon's sock – Sue Hendra Jack and the beanstalk Jasper's beanstalk Mr wolf's week – Colin Hawkins Pairs! In the garden- Smriti Prasadam-Halls The animals came in 2 by 2. Days of the week song. The socks song- Cocomelon	Design and create own patterned wallpaper. **NRICH:** Building towers **NRICH:** Making footprints **NRICH:** Pattern making **Stories and rhymes** Nine naughty kittens- Linda Jenny Pattern bugs- Trudy Harris Pattern fish- Trudy Harris 10 Again- Number blocks Blast off- Number blocks Banana, banana, meatball- GoNoodle. How many fingers? Song.

SUMMER SMALL STEPS

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Number: • Building numbers beyond 10. • Counting to 20. • Comparing numbers to 20. **Spatial reasoning:** • Matching shapes. • Making and matching shape arrangements. • Describing the position and direction of shapes and objects.			**Number:** • Adding more • Taking away • First, then, now **Spatial reasoning:** • Composing shapes. • Decomposing shapes.			**Number:** • Doubling • Sharing and grouping • Odd and even **Spatial reasoning:** • Position and direction. • Visualising and building.			**Number:** • Problem solving • Patterns and relationships • Consolidation **Spatial reasoning:** • Directions and maps.		

SUMMER ACTIVITIES

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Number Building numbers using different resources. Part-part whole with manipulatives. Matching numbers with pictorial/ abstract Building numbers in order. Correcting counting errors. * Using different colour cubes to show teen numbers are 10 + a bit. Number tracks Snakes and ladders to 20. Dot to dots **NRICH:** Incey wincey **NRICH:** Show me **Spatial reasoning** Jigsaws Matching shapes. Creating shapes on pegboards. Create and copy shapes using multi-link cubes. * Creating and describing pictures using a range of resources. Designing models on paper to build physically. Using the small world to describe the position of the toys. Which shape doesn't belong? *			**Number** Adding/ taking away more using: First, then, now. Use a variety of resources to show this. Use real life contexts using the children to add/take away. Roll a dice and keep adding more. (First, I get one cube, then I get 2 cubes, now I have 3) Children create their own first, then and now with toys and resources. * Start with 10 cubes, then roll a dice, take away the number rolled- first to 0 wins. Hide parts of the first, then and now and ask children what they think before checking. * Represent using part-part-whole. Fix my mistake. * **NRICH:** The box game **Spatial reasoning** Have a range of 2d shapes for children to create their own shapes or bigger version of the shape. Use cuisenaire rods and numicon to form shapes and fit inside an already drawn shape. Create own jigsaws. How many shapes can fit inside another shape? * **NRICH:** Shapes in the bag **NRICH:** Exploring 2D shapes			**Number** Finding doubles using dominos, dice, numicon and ten frames. Matching quantities as partners. Roll the dice game. Points for doubles rolled. paint printing and folding. (Introduction to symmetry) Matching doubles card games. Correct me, double or not? * Sharing objects out, discussing are the groups equal? * Making groups of toys, how many in each group? Putting children into pairs- is someone left out? There is an odd number. Sharing and grouping. Discuss if they are even or odd amounts. **NRICH:** The doorbell rang **NRICH:** Two halves **Spatial reasoning** Discuss the position of where objects/ pictures are. Follow instructions of where to place blocks when building in partners. Take photos from different viewpoints. Recreate pictures using objects. Recreate shapes made by cubes.			**Number** Use number stories and resources to pose problems for the children to solve. Ask children lots of questions in their play to consolidate numbers to 20, adding and subtracting. Children can create their own number stories. Challenge to make the biggest/ tallest/ strongest/ fullest item. Commando Jo tasks can be used as problem solving tasks. Forming and recreating patterns using a range of resources. Finding patterns in number. * Finding equal amounts using maths resources. 2 + 1 numicon fits onto 3 numicon. * **NRICH:** Scooters, bikes and trikes **NRICH:** I have a box **Spatial Reasoning** Look at and compare maps from different contexts. Design a map to go with a story/ tale. Design a map for the cars to drive on. Draw a map of the classroom. Walk around the local area and note what they see. Make a class map of Hyson Green.		

NRICH: Tubes and tunnels **NRICH:** Making footprints **Stories and rhymes** Jack the builder- Stuart J Murphy Which one doesn't belong? - Christopher Danielson Ten's place- Number blocks I can count to twenty- Number blocks	**Stories and Rhymes** Mouse Count- Ellen Stoll Walsh Elevator Magic- Stuart J Murphy Grandpa's quilt- Betsy Franco 10 green bottles 5 little ducks Flatland Number blocks Puzzle square Number blocks	**NRICH:** Making a picture **NRICH:** Can you build this? **Stories and rhymes:** The story of Alison Hubble – Allan Ahlberg One odd day- Doris Fisher Ness the nurse- Nick Sharratt We're going on a bear hunt- Michael Rosen What the ladybird hear- Julia Donaldson The hokey Cokey One little finger	Design an obstacle course. Create and solve mazes. **NRICH:** Mapping **NRICH:** Paths **Stories and rhymes** How many legs? – Kes Gray Little red riding hood Me on the map- Joan Sweeney Follow that map- Scot Ritchie How many seeds in a pumpkin? - Margaret McNamara

APPENDIX A

Cardinality and counting	Comparison	Composition	Pattern	Shape and space	Measures
Children should understand that numbers relate to quantities and are helpful with finding out 'how many'. Progression steps: Counting: Saying numbers in the correct sequence. *- forwards.* *- backwards.* *- Starting from different places.* Counting: 1:1 correspondence. *- Tagging an object with a number for careful counting.* *- Count items of different size, items that cannot be seen or touched.* Counting: saying the last number. *- Knowing that the last number said is 'how many'.*	**Children should understand that some numbers are worth more or less than other numbers.** Progression steps: More than/ Less than: *-comparing collections that are very different.* *- Comparing collections that have a slight difference.* Identifying equal groups: *- Compare collections that are the same amount.* Comparing numbers *- Comparing numbers and explaining why they have more/less?* *- Focus is on the abstract.* One more/one less *- One more* *- One less* *- Correcting mistakes.*	**Children should understand that numbers can be made from 2 or more smaller numbers.** Progression steps: Part, part, whole *- Number talks and manipulatives.* Inverse operations *- part + part = whole* *- Whole – part = part.* Partitioning *- Physically partitioning a number into two parts.* *- Physically partitioning a number into more than two parts.* Number bonds *- Bonds to 5* *- Bonds to 10*	**Children should actively look for and explore patterns to develop their understanding of mathematical relationships** Progression steps: AB pattern *- Continuing an AB pattern* *- Copying an AB pattern.* *- Making an AB pattern* *- Spotting mistakes* Finding the unit of repeat. More advanced patterns *- ABC patterns.* *-ABB, ABBC patterns.* Pattern spotting around us. Creating patterns that fit *- Around a circle* *- Used as a border.*	**Children should understand what happens when a shape is moved or combined with another shape. They will develop visualisation skills during shape and space that will develop their mathematical thinking.** Progression steps: Spatial awareness *- Develop spatial awareness through movement and different ways of looking.* *- Develop vocabulary through prepositional language.* *- Actively use language to describe objects.* Shape *-Explore shapes through play and construction.* *- Identify similarities through sorting.* *- Begin describing the properties of shapes.* *- Find relationships between 2D and 3D shapes.*	**Children should begin to compare weight, length and volume through appropriate vocabulary and non-standards measures** Progression steps: Recognise attributes *- begin to describe people or things as 'tall' or 'long' etc.* Comparing *- Begin comparing objects using 'taller', 'heavier' etc.* *- Begin predicting and estimating. (Is the box big enough for the ball to fit?)* *- Comparing more than 2 things.* Units *- To recognise the relationship between size and the number of units.* *- Being using non-standard units to measure.*

Subitising: Knowing an amount without counting. *- In regular and irregular arrangements.* Numeral meanings *- matching same numbers and amounts.* *- knowing that each number is worth an amount.* Conservation *- Knowing an amount does not change its quantity if it is moved around and rearranged.*					Time *- sequence events* *- Experience time durations*