# Early Years Mathematics and Numeracy Rich Environment Toolkit Indoors and Outdoors

**Introduction**

A child’s numeracy experience is enriched by the people and the physical environment around him/her. A numeracy rich environment emphasises the importance of using materials and interactions which facilitate numeracy and mathematical opportunities.

This Mathematics and Numeracy Rich Environment Toolkit supports the physical environment and offers ideas for staff to provide learning opportunities and resources to support progression in mathematics and numeracy.

**The Role of the Adult**

The role of the adult is crucial in providing experiences and opportunities for children to make sense of mathematics and numeracy around them.

The role of the adult is to:

* Engage with the children and be guided by them.
* Have a positive attitude to mathematics and numeracy.
* Enable all children to participate in activities.
* Encourage children to use the language of mathematics and numeracy.
* Encourage children to think, plan and cooperate.
* Enable children to problem solve through trial and error.
* Provide an environment where numeracy experiences are in context e.g., snack, baking, money, pattern, etc.

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| **Early Years Setting** | **Signed** | **Date** |
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* Offer mathematical experiences, which incorporate active learning.
* Involve and inform parents about numeracy opportunities through every day play and experiences.

# Using the Tool kit

## The Mathematics and Numeracy Rich Environment Tool can be used to help staff identify strategies and resources that are already in place and help identify areas for further development.

The tool can be completed in sections, or in its entirety – either by one member of staff or by the team.

Use the key to represent your judgements.

Record any further action on the Mathematics and Numeracy Rich Summary and Plan

Agree action and record impact.



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| **Key - Fill in the relevant shape** |  |
| In place and working well |  |
| Partially in place |  |
| An area for development |  |



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| **Mathematics and numeracy across learning** |  |  |  |
| Do staff take into account the different levels of ability when providing resources in all areas? |  |  |  |
| Do staff provide rulers, a variety of tape measures, a meter stick available for children to use inside? |  |  |  |
| Do staff provide number symbols / shapes on the doors in your nursery (including toilet doors)? |  |  |  |
| On the doors outside, do staff provide opportunities for children to use higher numbers e.g. 76, 162? |  |  |  |
| Do you use number symbols for returning equipment? |  |  |  |
| Have you made up registration number plates on your wheeled toys? |  |  |  |
| Do you have painted numbers for parking bays? |  |  |  |
| Have you got a weather chart outside? |  |  |  |
| Is there a thermometer outside? |  |  |  |
| Do you have a system for measuring rainfall outside? |  |  |  |
| Do staff take children out in the wider environment to look for signs, which you can incorporate in the nursery environment as appropriate? |  |  |  |
| Do staff use open ended questioning? |  |  |  |
| Do you provide opportunities for children to collect natural items to sort and match outside? |

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| **Mathematics and numeracy across learning** |  |  |  |
| Do staff take children on local walks and give them the opportunity to take photos e.g. patterns/shapes in the environment? |  |  |  |
| Are any steps numbered inside? |  |  |  |
| Are any steps numbered outside? |  |  |  |
| Do you have number lines outside which children have easy access to, starting at 0 or symbol representing 0? |  |  |  |
| Do you have a number line on the ground where children can move along, forwards and backwards? |  |  |  |
| Do children have the resources to make their own grids and number lines? |  |  |  |
| Do you model how to count for a real purposei.e. at snack time, counting children, equipment, etc? |  |  |  |
| Are children encouraged to make signs with the number and a picture of how many children can play in each area? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

**Mathematics and numeracy across learning**

**Examples and Ideas**

Display relevant posters, pictures and books around the nursery for children to use as a stimulus

Provide indoors bags with variety of different utensils for mark making. Children can take from area to area. Put in a picture and word check list to enable children to match and return resources.

If you have a natural puddle in your playground you can use it for foot prints and tyre tracks which children can compare.

Encourage children to problem solve and to use mathematical language, for example, to set up their own obstacle courses.

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| **Mathematics and Numeracy Area** |  |  |  |
| Do you have a well resourced mathematics and numeracy area? |  |  |  |
| Do you have an interactive numeracy display relating to the current ‘experience and outcome’ in your planning? |  |  |  |
| Do you have relevant mathematical vocabulary displayed relating to the current ‘experience and outcome’? |  |  |  |
| Do you have number lines starting at 0, or symbol representing 0, which children have easy access to inside and outside? |  |  |  |
| Do you provide pens, paper, rulers, calculator and magnetic numbers? |  |  |  |
| Do you always have a number book displayed and a range of number game? |  |  |  |
| Are there a variety of items for children to sort and match? |  |  |  |
| Do you have number grids and resources for children to make their own? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

**Examples and Ideas**

Ask open-ended questions such as: “Which is the best way to find out what cup holds the most?” How can you make the wheel go faster and slower

Encourage children to ask questions (how, what, when, why or who?) Provide a mud kitchen as an outdoor maths learning environment

Example of possible resources: sponges, corks, plant pots, funnels, straws, set of graded plastic bottles

Example of imaginative water play: range of plumber’s pipes and connections, fishing nets, plastic ducks, fish, (to go with number songs)

**Examples and Ideas**

Encourage children to think about what they want to do and what kind of sand they need for the purpose

Do you provide different opportunities for children to play with sand e.g. a small plastic basin and small utensils, a Sahara box

Examples of possible resources: sieves, spades, spoons, buckets, tubing plastic bottles, moulds, cutters, scoops, rakes, funnels, sand wheels, lollipop sticks, different sized containers

Imaginative sand play resources: play people, diggers, tractors, dumper trucks, flags, tea set, cones, shells, baking equipment, twigs, feathers etc

Sand play substitutes: Peat, sawdust, shavings, lentils, grain, rice, pasta, soil etc



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| **Water** |  |  |  |
| Do you have **outside** water play? |  |  |  |
| Have you got an outside tap or water butt? |  |  |  |
| Does your outdoor water equipment include:- a hose, watering cans, guttering and pipes? |  |  |  |
| Do you provide different sized brushes and rollers for water play outside? |  |  |  |
| Do you have a water tray **inside**? |  |  |  |
| Are there different sized calibrated measuring jugs? |  |  |  |
| Do you provide different sized containers? |  |  |  |
| Do you have a water wheel? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

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| **Sand** |  |  |  |
| Do you offer sand play **inside**? |  |  |  |
| Can children play with sand **outside**? |  |  |  |
| Is there enough sand in the tray? |  |  |  |
| Do you provide different sized containers? |  |  |  |
| Do you provide opportunities for children to experiment with wet, sloppy and dry sand? |  |  |  |
| Is there a clearly labelled system for children to sort equipment when tidying up? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |



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| **Technology** |  |  |  |
| Do you have a variety of software on the computer to support mathematical concepts? |  |  |  |
| Do you have a system to ensure that all children have access to the computer? (timer, signing in sheet, name cards etc) |  |  |  |
| Do you have sand timers to promote turn taking? |  |  |  |
| Do you have large calculators which children can use throughout the nursery? |  |  |  |
| Do children have opportunity to take photographs inside, outside and in the community? |  |  |  |
| Do children have opportunities to print their photographs? |  |  |  |
| Do staff provide programmable toys to promote mathematical language? e.g. Bee Bots |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |



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| **Book Corner** |  |  |  |
| Do staff provide stories to promote the use of mathematical language in story telling? |  |  |  |
| Do you use stories that have a repeated pattern? |  |  |  |
| Do staff provide props to support number songs and stories? |  |  |  |
| Are there non-fiction maths books and fiction books with supporting props displayed throughout the playroom? |  |  |  |
| Do you have a variety of maths non-fiction, fiction books and props **outside**? |  |  |  |
| **Do you provide resources to support the current planned learning experiences and outcomes?** |

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| **Drawing and Writing** |  |  |  |
| Do you have **outdoor** bags with a variety of different utensils and paper for mark making? |  |  |  |
| Do you provide clipboards and writing utensils for use **outdoors**? |  |  |  |
| Are children given the opportunities to write numbers, make tallies using a variety of medium e.g. chalk, paint, pens, pencils |  |  |  |
| Do staff provide rulers, graph, plain and squared paper? |  |  |  |
| Do you have books related to the learning outcome? |  |  |  |
| Are there numbers and number lines available – horizontally and vertically displayed? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

**Examples and Ideas**

Go on a numeracy / maths walk and use a camera to take photos.



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| **House Corner/Role Play** |  |  |  |
| Is there a calendar? |  |  |  |
| Is there a clock at children’s height? |  |  |  |
| Is there a telephone, mobile phone? |  |  |  |
| Do you have a homemade telephone directory with useful telephone numbers? |  |  |  |
| Do you provide a note book, shopping list, clipboard and pencils? |  |  |  |
| Do you have recipe books available in the kitchen area? |  |  |  |
| Do you have scales - balancing and digital? |  |  |  |
| Do you have 3D objects – cereal boxes, tins, oranges, etc? |  |  |  |
| Is there a notice board? |  |  |  |
| Do children have access to money/purse? |  |  |  |
| Do you provide resources for children to set the table appropriately with matching items? |  |  |  |
| Can children use a washing line to match and sort pairs of socks etc? |  |  |  |
| Do you have a clear system for children to sort clothes when tidying up? |  |  |  |
| Do you use photographs to support children when tidying up? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

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| **Construction Area** |  |  |  |
| Do you have a construction area **inside**? |  |  |  |
| Do staff provide opportunities for children to construct **outside**? |  |  |  |
| Do you provide large equipment which children can be creative with e.g. tyres, crates and wooden planks? |  |  |  |
| Does your construction area have wooden block play? |  |  |  |
| Do you have large and small blocks and blocks of different shapes? |  |  |  |
| Is there a clearly labelled system for children to sort and match when tidying up? |  |  |  |
| Do you have a measuring box for **inside** play – measuring tapes, rulers, string, ribbons? |  |  |  |
| Do you have a measuring box for **outside**play? |  |  |  |
| Do you have clipboards, pencils and a variety of different paper e.g. squared, plain and lined? Indoors and outdoors |  |  |  |
| Do children have the opportunities to take photographs of their creations? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |



**Construction Area Examples and Ideas**

Display mathematical language related to photographs of children’s creations.

**Examples and Ideas**

Have a clipboard at the snack table – opportunities to mark make, tally etc;

Ask children to pay for snack

Talk about how many children are having snack and how many spare seats are free

**Examples and Ideas**

Examples of possible resources: Domino sets, Peg boards, Hammer and Nail packs, Magnetic shapes and boards, Sequencing games, snap games

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| **Snack/baking** |  |  |  |
| Do staff offer children the opportunity to prepare snack on a regular basis? |  |  |  |
| Are children given the opportunity to decide on the menu and to draw/write it? |  |  |  |
| Are numbers displayed to inform children how many snack items they can have? |  |  |  |
| Can children make signs for how many children can have snack? |  |  |  |
| Do staff use baking to promote mathematical language and concepts? |  |  |  |
| Do children have the opportunity to make their own recipe books, to follow a sequence and support other numeracy skills? |  |  |  |
| Do children use scales – balancing and digital? |  |  |  |
| Do you provide resources for children to write a shopping list? |  |  |  |
| When planning for snack/baking do you highlight meaningful mathematical language? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

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| **Table top games** |  |  |  |
| Do staff provide jigsaws of different levels of challenge? |  |  |  |
| Do you give children the opportunity to play with dice? |  |  |  |
| Do you have maths games, e.g. dice games, sorting, matching, time etc? |  |  |  |
| Are these games changed on a regular basis? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |



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| **Art and Craft** |  |  |  |
| Do staff provide materials **outside** for children to weave into a fence? (e.g. ribbon, string, wool) |  |  |  |
| Are children given the opportunity to sort/fill up the junk materials cupboard/shelf? |  |  |  |
| Do you have a clearly labelled system for children to sort materials for junk modelling? |  |  |  |
| Is the paper well organised by size (small, medium or large) or shape? |  |  |  |
| Do you have rulers, pens and paper available at the art table? |  |  |  |

**Examples and Ideas**

Encourage children to help set up the area;



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| **Music and Movement** |  |  |  |
| Do children have the opportunity to engage in ring games and action songs which contain mathematical language inside and outside? |  |  |  |
| Are children given frequent opportunities to listen to number rhymes and songs? |  |  |  |
| Do you have props for children to act out number songs? |  |  |  |
| Do children have opportunity to invent music, using musical notation? |  |  |  |
| Have you got musical symbols/signs in your music area? |  |  |  |
| Have you got a clearly labelled system for children to match instruments to labels? |  |  |  |
| Do children frequently sing number based songs? |  |  |  |
| Do you provide props to support number and rhyme songs? |  |  |  |
| Do you have a numeracy based song book? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

**Examples and Ideas**

Provide number song bags with props and materials for children to create a context, e.g. ‘Five Little Frogs’ and provide chalk for the children to draw the pond and log, to act out the song

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| **Malleable Materials** |  |  |  |
| Do children have the opportunity to experience a range of materials, play dough, clay, shaving foam and gluck? |  |  |  |
| Do children have access to a variety of utensils to cut, print, roll etc? |  |  |  |
| Do children have the opportunity to help make play dough each week? |  |  |  |
| Is there a child friendly recipe book? |  |  |  |
| Do you provide resources to support the current planned learning experiences and outcomes? |

**Scoring and interpreting results**

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| **Key - Fill in the relevant shape** |  |
| In place and working well |  |
| Partially in place |  |
| An area for development |  |

## Record particular strengths and areas for development on the summary sheet.

**Make a Plan**

* The summary sheet can be used to form the basis of discussion within your team and to make an action plan.
* Think about things staff want to change and how much work will be involved in the change.
* Try to set achievable and realistic goals
* Identify who in your setting will make changes and who you may need to enlist for support from partner agencies, for training, resources or information.
* Identify a time to review progress

**Mathematics and Numeracy Rich Environment Summary and Plan for Indoors and Outdoors**

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| **Name of Establishment:****Date:** |
| Summarise aspects of the numeracy environment that are in place and work well **indoors** |
| Summarise aspects of the numeracy environment that are in place and work well **outdoors** |
| Write down aspects of the numeracy environment **indoors** that could be better. | Action points: (Who will be involved, resources, training needed, by when, etc.) |
| Write down aspects of the numeracy environment **outdoors** that could be better | Action points: (Who will be involved, resources, training needed, by when, etc.) |