# Children aged 3 - 5 years

The phrase ‘it takes a village to raise a child’ applies to mathematics education and improving future mathematics outcomes. Mathematics and numeracy is everyone’s business. Whether you are an [early childhood educator], primary teacher, a secondary teacher (of a discipline other than mathematics), a parent or carer, a politician, a celebrity, or anyone else with influence on children, we are all responsible for improving mathematics education. So, let’s pause, take a deep breath, and think about what we can do differently to improve mathematics for our students as we begin this new decade (Attard, 2020).

Catherine Attard is an Associate Professor of Mathematics Education and Deputy Director of the Centre for Educational Research at Western Sydney University.

|  |
| --- |
| General ideas  |
| Mathematics and numeracy experiences for pre-schoolers continue to be most relevant when they are connected to children’s everyday experiences. Children at this age are responsive to guided exploration into the relationships between key mathematical concepts such as shape, pattern, number, space and their daily lives. By this stage, children are developing an overarching mathematical competency (Vogt, Hauser, Stebler, Rechsteiner, & Urech, 2018) and the capacity to think mathematically and explore what they know using mathematical terminology. Children are starting to recognise, accurately name and sort objects by colour, shape, size, and purpose and compare and contrast using classifications like height and size. They can often count to 10 and sometimes up to 20. They can use 1:1 correspondence, count up to 10 items in a group, understand what numbers stand for and accurately point to and start to predict cause and effect. Educators can ‘encourage them to make predictions and generalisations about their daily activities, aspects of the natural world and environments, using patterns they generate or identify and communicate these using mathematical language and symbols’ (DEEWR, 2009).The Victorian Early Years Learning and Development Framework (VEYLDF) requires that children are supported in developing their understanding of problem solving, reasoning and numeracy in a broad range of contexts. Children should explore, enjoy, learn, practice and talk about their developing understanding. Children need opportunities to practise these skills and to gain confidence and competence in their use. The environment (including the indoor, outdoor and emotional environments) that practitioners provide plays a significant role in supporting young children’s mathematical learning. The VEYLDF makes it clear that young children learn best through play and that for their learning to be effective, they need sensitive and informed support from adults. Play is central to the concept of integrated teaching and learning approaches. Play is essential to stimulate and integrate a wide range of children’s intellectual, physical, social and creative abilities. Effective early childhood practices use integrated teaching and learning approaches to support sustained shared thinking. All children can be successful with mathematics, provided that they have opportunities to explore mathematical ideas in ways that make personal sense to them and opportunities to develop mathematical concepts and understanding. Children need to know that early childhood professionals are committed to having high expectations for every child’s learning and development.Under the VEYLDF Learning and Development outcomes, children develop a range of skills and processes such as problem solving, inquiry, experimentation, hypothesising, researching and investigating. This is evident when children:* apply a wide variety of thinking strategies to engage with situations and solve problems, and adapt these strategies to new situations
* create and use representation to organise, record and communicate mathematical ideas and concepts
* make predictions and generalisations about their daily activities, aspects of the natural world and environments, using patterns they generate or identify, and communicate these using mathematical language and symbols
* explore their environment
* manipulate objects and experiment with cause and effect, trial and error, and motion
* contribute constructively to mathematical discussions and arguments
* use reflective thinking to consider why things happen and what can be learnt from these experiences.
 |
| Number and Algebra  | Measurement and Geometry  | Statistics and Probability  |
| Play-based learning experiences  |
| Set up a shopSet up a dramatic play space as a shop, with a variety of packages, containers and other items for sale. Use commercially available pretend money or make play coins and notes with the children. Use stickers or tags to give each item a price and encourage children to talk about how much items cost. Help them with calculations, paying and giving change.Educators can support children to take turns in the role of shop keeper and customer and to use numbers to participate in the play. Set up a number table Arrange a space where children can play with and practice counting collections of buttons, shells, stones and other natural or recycled materials.Educators can support children to count the items by providing a grid with numbers and space to organise the items. Singing with numbers Sing number songs and rhymes throughout the day and in groups. For example:[The Ants Go Marching](https://www.youtube.com/watch?v=JM484um9Zkk) [One Grey Elephant Balancing](https://www.youtube.com/watch?v=4f51KUdZNjg)[The animals went in two by two](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-the-animals-went-in-two-by-two/zr88bdm)[5 Cheeky Monkeys Jumping on The Bed](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-five-little-monkeys-jumping-on-the-bed/zm7rf4j) [There were ten in the bed](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-ten-in-the-bed/z7bnmfr)Reading with numbers Read picture books featuring numbers and take time to expand children’s understanding through discussion and connection to their world. Use the book as a starting point to count and use numbers to explore ideas and solve problems in their immediate environment. There are many books available that feature counting or stories about numbers that are suitable for preschool children. For example:*The Very Hungry Caterpillar*, by Eric Carle A newly hatched caterpillar eats his way through different amounts of all kinds of food.*A Counting Story From 0 To 7.5 Billion* by Kristin RoskifteA book helps you to count from 0 to 7.5 billion, by following the characters' stories. *The Doorbell Rang* by Pat HutchinsA story about how many people visit to share the delicious cookies. See the book list for more suggestions. Extending stories Many stories offer opportunities to think more deeply about Counting and Number. For example, *Ten in the bed* by Penny Dale. After reading the story, invite discussion and observation of individual pages and illustrations. Focus on mathematical discussion such as counting, spotting differences or similarities, colour, shape, size, distance and pattern. Read the story again and using soft toys, model the process of one falling out. Let the children remove the toys in the right order. Alternatively, use the children themselves as ‘toys’ lying on a doona and rolling out of the bed one by one, as you re-read the story. Concepts children will experience include:CountingOne moreOne lessOrdering and ordinal numbers (first, second etc.)Combining sets (source: Dr Marianne Knaus AAMT <https://www.aamt.edu.au/Early-Years/Starting-Points/A-Counting-Activity> )  | Blocks and Construction Create a large open space to be used for building and construction using a range of different shaped materials including materials such as: blocks recycled plastic containers and cupscardboard boxessmall toys such as cars and trucks animals fabric or carpet pieces.Children can explore the ways in which materials and objects, of different sizes and shapes, fit together to create structures. Provide a variety of objects of different shapes, including cylinders, squares, rectangles, arches and triangles. Educators can support children to name the shapes and describe their size using mathematical language. They can also experiment with the ways the materials fit together. For example:Challenge children to build a tower ‘*As tall as ..*.’ or ‘*Taller than …’.*Compare tower heights using string or against a hand length.Try building towers from other items and compare heights.Lay the towers down and measure using direct comparison, books or foot lengths.Singing with Shapes Sing number songs and rhymes throughout the day and in groups. For example:[I can sing a rainbow](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-i-can-sing-a-rainbow/zn3tqp3)[Ten Green bottles](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-ten-green-bottles/zncyt39) [Yellow Submarine](https://www.youtube.com/watch?v=7i1XD2yN4Ug) Reading with shapes and measurement Read picture books featuring shape, pattern, dimension and measurement and take time to note these ideas with children. Use the book as a starting point to identify the shapes and patterns you find in the children’s immediate environment. There are many books available that feature Measurement and geometry about numbers. For example:*Five Minutes Peace* by Jill MurphyA story about the importance of time and what can happen in 5 minutes. *How Big is Big?* by Gretel WatsonA story about Mrs Watson and her class who decide to explore how big is big? This question leads them on a journey of discovery.*How Deep is the Sea?* by Anna MilbournePipkin the Penguin explores measurement and depth by diving into the sea and finding the creatures at different depths. See the book list for more suggestions. Extending stories Many stories offer opportunities to think more deeply about Shapes and size. For example, *Room on the Broom* by Julia Donaldson. After reading the story educators could extend children’s thinking in a number of ways: Experiment with how many animals or other items could fit in various unusual places. E.g. How many elephants could fit in the fridge? Have a discussion and invite all the children to think about how many creatures could fit onto the broom you have been experimenting with to build from ‘Room on the broom’. Draw up a list of all the guesses and then test them out to see which guesses were right.  | Playing with statistics and probabilityUse everyday moments while children are playing to introduce the key concepts associated with statistics and probability. These will mostly focus on opportunities to sort and organise the materials they are using in play. For example:Organising the playdough and equipment so there is enough for everyone.Setting the table in dramatic play so there are plates and cups for everyone.Finding all the cars and or trucks or finding all the red blocks etc. Opportunities for probability discussion will occur naturally as children are trying to work out the likelihood of something happening. Prompt them with questions such as ‘*What do you think will happen if…?* Encourage children to make predictions and generalisations about their daily activities and aspects of the natural world and environment. Also encourage them to predict using patterns they generate or identify and communicate their ideas using mathematical language and symbols.Encourage children to use reflective thinking about why things happened and what can be learned from that experience. For example, ‘Did you notice what happened when you put that last block on top? Why do you think that happened?’Sing and reading with sorting, understanding and presenting information from groupsWhen reading children’s favourite picture books and singing their favourite songs, encourage children to say what happens next. Encourage children to recall the story or song in the right sequence. As children become more confident, educators might invite children to mix up the sequence or invent new endings or beginnings. To support children with this, use props or pictures from the song or story. Include books whose stories involve sequences and discuss the sequence of the story with the children. For example:*Mr Archimedes Bath* by Pamela AllenEvery time Mr Archimedes has a bath with his friends, the water overflows. This story offers children a chance to think about why? *The Tiny Seed* by Eric CarleCarried by the wind, the tiny seed, along with other bigger seeds, travels far over the world. Invite children to think about what will happen next. *Circle* by Jeannie BakerThis is the story is about a bird who follows a migration of 11,000 kilometres. This provides an opportunity to think about a sequence.Stories such as this can be retold using props, pictures or puppets where children are encouraged to recall the story in the right order. *Counting on Frank* by Rod ClementA story about how Frank knows how many humpback whales would fit in his house. But can Frank guess the number of jellybeans in the jar?*There Was an Old Lady Who Swallowed a Fly* byPam AdamsA story about a woman who swallows a fly, and other creatures. What do you think will happen next? See the book list for more suggestions. Extending stories The following stories support broader discussion about statistics and probability. *Mr Archimedes Bath* by Pamela AllenMr Archimedes hops in and out of a bath with a kangaroo, goat and wombat. Each time he examines the water level. He tries to understand why the bath always overflows when ALL the friends are in it. Invite children to think about what might happen each time and make predictions and test their hypothesis. *Five Creatures* by Emily JenkinsA girl describes the three humans and two cats that live in her house using words and pictures and details some of the traits that they share. A great introduction to sets. |
| Out and about spaces – in the yard, in the garden, in the bush |
| Balancing game This game emphasises physical activity and counting. Put a string on the ground.Ask one child to walk along the string while you all sing: *One grey elephant balancing* *step by step on a piece of string* *thought it was such a wonderful stunt* *they called for another elephant.**Click* [*here*](https://www.youtube.com/watch?v=4f51KUdZNjg) *to access a version of the song.* Ask the first child to invite another friend to the piece of string and sing the next verse together: *Two grey elephants balancing* *step by step on a piece of string* *thought it was such a wonderful stunt* *they called for another elephant.*Add more children to the string while counting and singing until:  *All of a sudden, the piece of string broke and…*Encourage the children to think about what happens when the string breaks – “what do you think happened next?” *…down came all the elephants.* | Journeys Children enjoy demonstrating their knowledge of how to get from one place to another. They are often aware of their local community and the landmarks that feature as they travel around.  Invite children to think about where they are going to go before they go out and about. Create a guide using paper notebook or clipboard (or go digital using a phone) to note the things that will help them find their way. The use of pictures and key words are a helpful way to do this. For example, ‘*Look for the red letter box or the shop with the horse out the front*’. Walking expeditions around the local environment can be used as the basis for teaching mapping skills. This could include creating a map of the expedition, discussing directions including left, right and the compass points, exploring time taken to complete the journey or to reach landmarks and how landmarks might be represented as symbols on a map. (Source: Spatial reasoning and mathematics in early childhood education Every Child Volume 23 Issue 3 (2017) | Going OutAs you get ready to go out talk to children about what will be needed on the walk. Invite children to look outside to see what the weather is like and then talk about what they will need. Pose some questions to help children make predictions and think about possible scenarios. For example, *‘What happens if we get thirsty… should we bring our water bottles?’* *‘What should we wear on our feet to stop our feet getting cold and wet?’*   |
| The home, in the community  |
| Money at the supermarket When buying items at the supermarket, explain to children how items are priced and that some items have cheaper or more expensive versions of the same product. Use this opportunity to discuss the cheapest price and the higher price by looking at the numbers on the shelf.In routines Use routines such as mealtimes, bathing, getting dressed or ready for bed, as times to explore numbers and the way they help us describe the world. For example, doing jobs around the house.Routines tasks around that house present opportunities for children to count and learn about numbers. For example, count the number of socks or t-shirts as you hang them up or take them off the washing line. ‘*I will hand you the socks, and you can count how many we have?'* *Do your kids like to help out in the kitchen? Meal prep is the perfect time to get children counting, measuring, estimating, comparing, and recognizing shapes. Ask your child to measure and count cups of ingredients, count how many plates and utensils are needed for the whole family, and figure out who has more or less mashed potatoes. Get creative with mathematics during clean up time, too: you can have your child name the shapes of the dishes and sponges, count the number of steps they took to complete the cleanup task, and predict how many dishes will fit in the dishwasher.* *Source:* [*https://blog.brookespublishing.com/24-at-home-learning-activities-to-share-with-parents-of-young-children/?j=4398424&sfmc\_sub=62230207&l=2577\_HTML&u=89763402&mid=7004326&jb=0&utm\_medium=email&utm\_source=exacttarget&utm\_campaign=20200402-ec-newsletter*](https://blog.brookespublishing.com/24-at-home-learning-activities-to-share-with-parents-of-young-children/?j=4398424&sfmc_sub=62230207&l=2577_HTML&u=89763402&mid=7004326&jb=0&utm_medium=email&utm_source=exacttarget&utm_campaign=20200402-ec-newsletter) | Cooking Involve children in more complex cooking experiences that require following a recipe and measuring ingredients. Read a recipe with the children and ask them to think about the different items and ingredients they will need in preparation. The following muffin recipe, The Australian Parenting Website, [Cooking with pre-schoolers](https://raisingchildren.net.au/school-age/family-life/family-meals-cooking/cooking-with-kids-teens#cooking-with-preschoolers-nav-title), supports children to think about measurement. *Carrot and oat mini muffins*Makes 24Preparation time: 15 minutesCooking time: 15 minutes150 gm wholemeal flour150 gm plain rolled oats180 gm carrots, grated (about 2 medium carrots)70 gm honey or brown sugar ½ tsp. cinnamon2 eggs100 ml olive oilPreheat oven to 180°C. Lightly oil a 24-hole mini muffin tin with olive oil spray.In a large bowl, combine flour, oats, grated carrot, honey or brown sugar, and cinnamon. Mix to combine. Lightly whisk eggs and add to oil. Pour into carrot mixture and mix until just combined (don’t overmix).Spoon evenly into the muffin tin. Bake in the preheated oven for 12-15 minutes, or until a skewer inserted comes out clean.Allow to rest in the tin for 5 minutes before turning out and cooling on a wire rack.TipsSubstitute grated pumpkin, sweet potato or zucchini for some or all of the carrot.Add in other raisins, chopped fruit, mashed banana as desired. [Cooking with pre-schoolers](https://raisingchildren.net.au/school-age/family-life/family-meals-cooking/cooking-with-kids-teens#cooking-with-preschoolers-nav-title), which is part of The Australian Parenting Website, provides a range of recipe ideas. Children can also be invited to manage a cooking process by themselves such as making playdough. Pictures and symbol cards could be used to support children to understand the steps or alternatively, create a book with the key steps for children to follow. Children may need to work closely with educators as they learn about the steps until they can confidently undertake the process themselves.  | Celebrations Preparing for a family celebration provides an opportunity for children to consider what information they may need and make decisions about what might happen.For example, if a family birthday is coming up ask children to think about the following questions:What might happen at the birthday? What you might need to wear if the party is indoors or outdoors?Who might be there?What you might need to bring? Use words like Certain - an event will happen without a doubtLikely - the probability of one event is higher than the probability of another eventEqual probability - the chance of each event happening is the sameUnlikely - one event is less likely to happen versus another eventImpossible - there's no chance of an event happeningThese definitions are taken from the [Probability Lesson for Kids: Examples & Definition](https://study.com/academy/lesson/probability-lesson-for-kids-examples-definition.html) website.Encourage children to use the information they have when planning. For example, ‘*We know grandpa is coming and he likes chicken so let’s bring some roast chicken’*.  |
| Educator led teaching  |
| Transition: The dice game Dice game transitions can be used to support children’s use and understanding of numbers and counting To play the game children sit in a circle with a large die One child rolls the die in the middle of the circle.Next, they count the dots face up on the die.Then they count the same number of children in the circle, and they are able to move to the next experience together. Another child takes a turn until there are no children left in the circle. This activity has been adapted from [Queensland kindergarten learning guideline Professional development](https://www.qcaa.qld.edu.au/downloads/p_10/qklg_pd_comm_engage_num.pdf) resource.Bingo game Introduce bingo to children using either a commercially purchased game or a home-made version. Bingo offers an opportunity for children to explore, recognise and match numbers. This game also supports listening skills. Board and card games There are a range board games that support children to explore and make meaning of numbers. Many of these games are commercially available. For example: Snakes and LaddersShopping List GameUnoNumber music and movement games There are many music and movement games that include counting and number recognition. These include:Musical chairs - children count the chairs when the music stops and as each chair is taken away.Moving to music and finding a specific number when the music stops. For example, make a large grid with largely printed numbers on the floor. Children move to the location of the specific number when the music stops.Note: If all children go to the number then the space must be big enough so perhaps do not include many boxes in the grid.Moving to music and when the music stops children must form groups of a particular number.  | Make a patternUse beads and pre-prepared pattern templates (these can be made or purchased) to encourage children to follow a pattern. Begin with simple patterns and support children to follow the template to decide which bead goes next. As children become more skilled, the templates can become more complex, or children could design their own to follow. Use a range of materials and resources to encourage children to explore creating different patterns. A board or base shape in the form of a tray or wooden board is a helpful base shape to work from. Materials that could be used to create patterns include: Glass beadsRocks and stonesLeavesFlowersRecycled materials – cardboard shapes, plastic lids or bottle tops. Also consider repeated sequences. The most common examples are AB sequences such as a red, yellow, red, yellow… pattern with cubes. More challenging are ABC or ABB patterns with repeating units like red, green, blue or red, blue, blue.Copying patterns is also important. The subsequent conversation between educator and child, comparing their construction with the original pattern, is crucial to developing pattern awareness Papic et al (2011). It helps them to focus on what is the same and what is different and to see the underlying pattern structure. For more information on developing pattern awareness click [here](https://nrich.maths.org/13362). Shape huntThis activity has been adapted from the NZMaths resource, [General Interaction Ideas: Measurement.](https://nzmaths.co.nz/general-interaction-ideas-measurement) Invite children to go on a hunt around the room to look for specific shapes.*‘Can you find a circle shape?’* *‘Can you find a square?’* This game can be played at a transition time as children move to another experience. Educators might need to position basic shapes in prominent locations to begin with and then as children become more confident look for more difficult shapes in less obvious locations.*Can you find a circle shape on the snack trolley?* *Can you find a rectangle near the easels?*Other options include looking for a A short stickA long piece of stringA heavy bagA light bookAn empty containerExtend children’s understanding by showing them what you mean before you ask them to find certain objects. For example:*That's a heavy rock, you hold it. Can you find another heavy one?**Laura has an empty box. Can you find another empty one?*Ask children to describe their thinking:*‘How do you know that is a short one?’**‘Why do you think that is a heavy one?’**‘Why is that an empty one?’*Children could also take the lead in this game and be the one to invite others to hunt for shapes. Measurement table Set up a measurement table with a range of different measuring tools for children to explore and use. These could include: RulersTape measures Triangular and half-circle rulersTriangular Architect's rulerSet squares Scales (digital and/or balance scales). This space might also include textas, pens and paper and clipboards etc. for children to record their measurements. Balance ScalesProvide an assortment of balance scales which might have tubs, buckets, pans etc. Coat hangers with pegs on each end could also be used as scales. Provide a variety of items such as cars, cotton reels, counters, shapes, stones, buttons, fruit, books, small bags of sand etc. Encourage the children to compare items using the balance scales. Support them as they make these comparisons.*‘Which is lighter? Let’s check both and find out’. ‘Which is heavier? How can we check?’*Ask children to describe their thinking. ‘*Why do you think that is the heaviest / lightest one?’**‘How might you check?’* | Graph work Graphs are an important way to examine and communicate information or data. Bar and line graphs are useful tools to support children in gathering, sorting and organising information or objects and to learn to ask questions. Graphs can be made drawn or creating using real objects or symbols. There are many ways to introduce and use graphs in meaningful ways with children, including:Collecting different natural materials when out on a walk. Sorting them into specific categories by colour or size and then representing these results in a graph. Collecting data about favourite toys, books, colours, games or songs. Looking at the food the children bring in their lunch boxes over a period of time. E.g. Use the graph to answer questions such as ‘*How many people brought apples this week or this term?*’ Voting on key decisions made about the program by children and graphing the results. For example, voting on the name of the new class chicken or fish or what food everyone would like for the end of year party?Incorporate Probability by asking children to speculate about outcomes before the data is collected. For example: How many children will bring bananas this term? How many days will be windy this week? How many children will have their birthday in July? How many people can throw the ball into the basket? Who’s Where?Creating a visual attendance chart using cards, with the name and photo of each child, enables children to see who is present or absent. Parents (or another adult) could move the card from “absent” to “present” as the child arrives each morning, drawing the child’s attention to the process. Creatingmathematical routines in the classroom can help children make connections between mathematics and their everyday lives. Choosing a book?The following learning experience has been adapted from NRICH resource, [The Voting Station](https://nrich.maths.org/content/id/13894/Voting%202.pdf). Promote children’s understanding of statistics and probability by setting up a ‘voting station’ with rating options that encourage children to make a decision about what they like and don't like. Voting decisions could vary from a book to read or the next song to learn or a game to play. Provide ‘voting bricks’ where each child’s name appears on a block with each child’s name. Children then place their ‘voting brick’ next to their choice. Use the blocks to make towers and discuss which option has the most votes by comparing the numbers of blocks. Birthday graph Read the story *I want two birthdays* by Tony Ross to the children. Use this to prompt discussion about children’s birthdays. Using either the age of each child or the months in which they have their birthday, create a birthday graph for the group.Graph of birthday months: In this graph, draw children’s attention to the graph by discussing which month it is and highlighting the children who have birthdays that month.Graph of ages: In this graph, compare how many children are each age. As a child has a birthday, move their name to the new age.Combining and sharing in practical situationsUse everyday situations which involve joining and separating sets to develop children's ability to count to solve number problems. For example:How many cups are on the table? How many cups are on the tray? How many cups are there altogether? Let’s count to find out.How many jackets are in the pile? If two children put their jackets on, how many will be left in the pile? Let’s count to find out.When we share the crackers (or fruit), how many will each person get? Is it a fair share?Ask follow up questions that encourage children to describe their thinking:How do you know?Why do you think that?Tell me about that.Are you sure?How could you check?Introduce the concept of hypothesis:What do you think will happen? Why do you think that?As children are participating in activities look for the following:Are they using counting to solve every day 'number' problems? Can they reliably produce an accurate result?Are they counting each item, only once? (That is, maintain one-to-one correspondence).Do they recognise the amounts getting larger as they add items, or reducing as they remove items?Do they understand the need for sharing fairly?This has been adapted from the NZMaths resource [General Interaction Ideas: Number](https://nzmaths.co.nz/general-interaction-ideas-number) |
| Helpful resourcesNorthern Territory Preschool Maths GamesThe [Northern Territory Preschool Maths Games](https://education.nt.gov.au/__data/assets/pdf_file/0003/444567/nt-maths-games.pdf) resource has been developed by The University of Melbourne for the NT Government to support the implementation of the Northern Territory Preschool Curriculum. The games are designed to assist preschool teachers enacting differentiated teaching and learning while maintaining important learning objectives for individual children that are informed by observation-based evidenceNZMaths[Supporting rich mathematical interactions in ECE](https://nzmaths.co.nz/supporting-rich-mathematical-interactions-ece) contains a collection of mathematics education information from New Zealand.[Picture books with measurement](https://nzmaths.co.nz/picture-books-measurement-content) content contains a collection of mathematics related children’s books.Early Math Collaborative The [Early Math Collaborative](https://earlymath.erikson.edu/ideas/) contains a collection of ideas to support and enhance the teaching of mathematics to young children. Central to their ‘approach is a set of Big Ideas in early mathematics created by the Collaborative to provide teachers of young children with a series of central, coherent, and developmentally appropriate concepts that can be incorporated into any curriculum’.Fostering Understanding of Early Numeracy Development - ACERThe [Fostering Understanding of Early Numeracy Development](https://research.acer.edu.au/cgi/viewcontent.cgi?article=1028&context=monitoring_learning) report describes the numeracy skills of the preschool children (at the end of the year prior to starting school) who participated in the first year of the Longitudinal Literacy and Numeracy Study: Transitions from Preschool to School. A better understanding of the numeracy knowledge and skills of preschool children has two important outcomes for early childhood educators and early years teachers: knowing what knowledge and skills can be fostered among young children and understanding the early numeracy foundation on which formal instruction can build.Early Years Planning Cycle Resource for the Victorian Early Years learning and Development Framework (VCAA)The [Early Years Planning Cycle Resource for the Victorian Early Years Learning and Development Framework](https://www.vcaa.vic.edu.au/Documents/earlyyears/EarlyYearsPlanningCycle.pdf) is designed to demonstrate how the VEYLDF planning cycle can be applied to observe, assess and respond to evidence of children learning. Children’s mathematics picture booksPicture books are frequently requested by teachers and parents as a way to introduce children to mathematical concepts. The following websites contain suggestions of useful books. These mathematics books are recommended for children aged four to grade 6.[Picture books](https://www.mav.vic.edu.au/Resources/Primary-resources/Picture-books) – The Mathematical Association of Victoria[Picture books with number content](https://nzmaths.co.nz/picture-books-number-content) – NZMaths[Children’s mathematics picture books](https://my.christchurchcitylibraries.com/maths-picture-books/#OtherConcepts) – Christchurch city council librariesVictorian Early Years Learning and Development Framework Illustrative MapsThe [Illustrative Maps](https://www.vcaa.vic.edu.au/curriculum/earlyyears/veyldf/veyldf-illustrative-maps/Pages/Index.aspx) are a set of maps developed for early childhood professionals to inform curriculum planning and pedagogy with young children, that link the five outcomes with the first three levels of the Victorian Curriculum F-10.FUSE ResourcesThis [resource package in FUSE](https://FUSE.EDUCATION.VIC.GOV.AU/?G7L2NZ) is a collection of activities to develop children’s skills in the areas of science, technology, engineering and maths (STEM). For more activities search ‘Early Childhood’ from within FUSE |