# Children aged 2 - 3 years

Young children construct their own understandings as they observe and participate in everyday life. The development of mathematical understandings occurs in a range of settings: at home, at childcare and while shopping or at the park. Parents and educators, when they provide the necessary language, meaningful experiences and opportunities can enhance children’s early mathematical learning (Knaus, 2016, p.1).

Very early in life children display evidence of having a plan and awareness of needing to do things in a particular order to achieve a desired outcome (Babies and Toddlers Amazing Learners: VCAA page 16).

Throughout the first three years, children demonstrate that they enjoy putting together and taking apart, stacking and knocking down, fitting things inside other things, moving objects from one place to another, filling up containers and dumping contents. They also enjoy sorting and classifying objects and display increasing understanding of categories. Over the first three years increasing intentionality and purposefulness become evident in children’s play and other activities.

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| General ideas | | |
| Learning mathematics and numeracy skills for children aged 2-3 years old continues to be strongly connected to everyday experiences. Learning to understand and describe the world mathematically is supported by rapidly developing language skills and a growing interest in exploring the world around them. At this age, children are able to understand and use words that compare and measure the things around them (more, under, fast, behind, etc.). As they develop confidence in problem solving, creative thinking and imagination skills, children are more interested in experimenting and playing with concepts and ideas in concrete ways. Educators can encourage toddlers to strengthen their mathematics and numeracy skills by providing purposeful support in daily experiences that explore number, shape, size and basic pattern using natural and recycled materials, in routines, and play episodes. Talking about mathematics concepts (big and small, high and low, heavy and light etc.) helps them understand how and why mathematics is useful.  Teaching and learning happen all the time, not just at special times, and take many forms. Sometimes educators give instructions or initiate a learning opportunity. Often, teaching is responding to or being guided by the child. Usually, it involves the adult doing and/or saying something or having a conversation that is interactive. Teaching also includes educator's decisions not to intervene, but rather to observe, be close by, and accessible, an interested bystander. Setting up learning environments and making decisions about the structure of the program are also crucial. Whatever form it takes, pedagogy that is high quality is always thoughtful and purposeful.  [The Victorian Early Years Leanring and Development Framework](https://www.vcaa.vic.edu.au/curriculum/earlyyears/veyldf/Pages/Index.aspx) (VEYLDF) adopts a comprehensive approach to children's learning and development. It identifies the five key Learning and Development Outcomes for children:  Children have a strong sense of identity.  Children are connected with, and contribute to, their world.  Children have a strong sense of wellbeing.  Children are confident and involved learners.  Children are effective communicators.  The VEYLDF includes a set of [Illustrative Maps](https://www.vcaa.vic.edu.au/curriculum/earlyyears/veyldf/veyldf-illustrative-maps/Pages/Index.aspx) 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. Mathematics and numeracy outcomes and evidence are included in the illustrative maps for each learning outcome but particularly for learning and communication. | | |
| Number and Algebra 2-3 years | Measurement and Geometry 2-3 years | Statistics and Probability 2-3 years |
| Play-based learning experiences | | |
| Playing with numbers Join in everyday moments while children are playing or to make a connection with numbers. For example, when children are playing with dolls, teddies or other soft toys invite them to prepare a picnic for each of their friends.  *‘How many friends are coming to the picnic?’*  *‘How many cups will we need?’*  *‘How many plates will we need?’*  Extend children’s thinking about numbers and division by asking them to share resources with their friends and toys.  *‘Can we share the cakes with everyone?’*  *‘One for you and one for you…’*   Singing with numbers Sing number songs and rhymes throughout the day and in groups. For example:  [*Five Little Speckled Frogs*](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-five-little-speckled-frogs/zjjbnrd)  [*Five Little Ducks*](https://raisingchildren.net.au/guides/baby-karaoke/five-little-ducks-with-lyrics)  [*Here is a beehive*](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-here-is-the-beehive-where-are-the-bees/zntdrj6)  For more songs to use with children, see [The Australian Parenting Website](https://raisingchildren.net.au/guides/baby-karaoke/song-sheets). Reading with numbers Read picture books featuring numbers and take time to count the items with children. Use the book as a starting point to count what is in the children’s immediate environment.  There are many books available that feature counting or stories about numbers. For example:  *Joey Counts to Ten* by Ambelin Kwaymullinaand Sally Morgan  In this book, Joey and his mum go about their day – they watch, look, listen and count.  *Ten Little Owls* by Renee Treml  Count the animals running, hopping, swimming, eating and playing from dusk to dawn come out to play.  See the book list for more suggestions. | Playing with measurement Provide children with measurement opportunities in sand and water play and with play dough.  There are many ways that these spaces can support children to think about and explore mathematical concepts such as capacity, volume, weight and area by providing containers of different sizes and shapes to support discussion and comparison about empty and full, heavy and light etc. Singing with shapes Sing songs and rhymes about shape, size, colour and pattern throughout the day particularly when children are actively interested in the world around them. For example:  [*Little Green Frog (Galumph)*](https://raisingchildren.net.au/guides/baby-karaoke/little-green-frog-galumph-with-lyrics)  [*Open Shut Them*](https://raisingchildren.net.au/guides/baby-karaoke/song-sheets/open-shut-them)    [*Twinkle Twinkle*](https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-twinkle-twinkle-little-star/zds6jhv)  For more songs to use with children, see [The Australian Parenting Website](https://raisingchildren.net.au/guides/baby-karaoke/song-sheets). 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 shapes and measurement. For example:  *Guess how much I love you* by Sam McBratney  In this book, Little Nut Brown Hare discovers it is difficult to measure love using his experiences with length and height.  Little Cloud by *Eric Carle*  A story about a little cloud that changes shape.  See the book list for more suggestions. | Playing with statistics and probability As children play, ask questions about what is happening and what might happen next. Encourage children to ask questions about things around them, how to solve problems, and what might happen if a certain situation occurs.  *‘What do you think might happen if we build the blocks too high?’*  *‘I wonder where the teddy has gone?’*  *‘What do you think happened?’*  *‘What do you think might happen if we go out now that it's raining? Do you think we will get wet? Do you think we should wait and go out later?’*  Children in this age group are keen to collect items that are of interest to them. Provide collections of toys and other natural and recycled materials along with baskets, bags and containers to encourage children to sort and create their own collections. Playing with Statistics Educators can support children to explore statistics by noticing collections and talking with them about the nature and features of groups of items that they have found and collected.  For example, children might be invited to collect:  leaves in Autumn from a number of trees that could be sorted by colour and size or shape  sticks that could be sorted by length  rocks or pebbles (or shells if you are at the beach) that could be sorted by size or colour.  Ask questions such as: ‘*Can you tell me how you decided what should go in each basket?*’  Children could also be invited to think of categories for their collections. For example, the ones that they like or don’t like?  Packing away can also be a useful time to think about groups and sorting.  Singing and reading with sorting, understanding and presenting information from groups  Read and sing children’s favourite picture books or songs and encourage children to show or say what happens next. |
| Out and about spaces – in the yard, in the garden, in the bush | | |
| Counting your actions When children are outside and physically active incorporate counting into their play.  Invite children to jump on a trampoline or jumping board and count the number of jumps.  Set up obstacles course for children to step, jump or climb and invite children to count as they go – *now go up the three steps – one, two, three..*. *now jump three times and then climb up*…  Set up a skittles game and count the skittles as they are knocked down.  When you are walking along count your steps – make it fun and challenging by asking children to count their steps to the next landmark – a tree or a letterbox. | Using sand Sand offers children opportunities to explore the attributes of the objects they are using. Extend children's understanding by naming attributes.  For example:  When the children are digging:  *‘Can you please pass me the spade with the short handle?’*  *‘Rani’s ditch is long. Can you dig a long one too?’*  *‘Elizabeth's hole is really deep. Can you make a deep one too? Let's see, whose ditch is the deepest? How can we measure it?’*  *‘Look, Mustafa’s made a shallow trench. Let’s drive our cars in it’.*  For more information on exploring measurement through sand play click [here](https://nzmaths.co.nz/sand-exploring-measurement). Treasure hunt Go on a treasure hunt and look for different colour items in the playground, in the garden, in the bush.  *Note: This treasure hunt activity could be combined with the sorting task in statistics.* | Making a collection Young children are actively interested in collecting items when they are outside in the playground, the garden or in the bush. Encourage them to collect the things that interest them.  Use containers, hoops on the ground, or piles to sort out what children have found.  Educators can support this by asking children questions like:  *‘Have you found a stick? Let’s put all the stick in this spile.’*  *‘What else have you found – a leaf… let's put all the leaves in this container – can you go and find some more?’* |
| The home, in the community | | |
| In routines Continue to use routines such as mealtimes, packing up bathing, getting dressed or ready for bed, as an important way to support children to explore numbers and the way they help us describe the world.  Toddlers can take more responsibility when participating in tasks around the house, and these can be a great time to practice counting and using numbers in meaningful ways, including:  Hanging up clothes on the clothesline – children can count the pegs for example.  Putting away clothes – counting how many pairs of socks every member of the house has.  Put socks together in pairs.  Count how many people are having dinner and then count how many plates or bowls or forks and spoons will be needed.  Count how many minutes (or seconds) are left before food is ready. The microwave is suitable for this.  Go on a ‘number’ walk in the community  Go on a number walk and look for numbers in the local community.  Talk to children before the walk about what to look for: Let’s look for numbers when we go on our walk.  Look for numbers as you walk along:  On letterboxes.  On car number plates  In the shop window  On advertising  Talk about the numbers that you found and ask children to find the same number on a different house, car or shop window. You might also like to take a photo of what you see and talk about these ideas later. | In routines Continue to use routines such as mealtimes, packing up, getting ready to go out, bathing, getting dressed or ready for bed, as times to explore shapes, patterns, dimensions and measurement and the way they help us understand and describe the world. For example: Mealtimes: After you have finished a meal or snack invite children to clean the table. As you clean, ask children to follow specific directions and use relevant terminology. For example, *‘Let’s start at the top of the table…’ or ‘Did you wipe the edge?’ ‘Did we clean the whole table?’* Cooking Involve children in cooking simple recipes and preparing food. There are many opportunities to learn about measurement as children count ingredients, fill measuring cups or portions of cups, choose the correct size containers, stir, pour, fill and mix. Ask children to help prepare food, and as you work talk about the different sizes and shapes.  For example, make fruit salad by asking children to choose the fruit they would like for the salad and talk about the colour and shape of each of the fruit.  Cut the fruit into different shapes and count the pieces. Then ask children to choose different colours and shapes to put in their bowl. Exploring shapes around the house: Clear a space large enough to stack objects. It might be on the floor for big blocks or boxes, or at the table for smaller stacks. Encourage children to see how high they can build. Talk about what is happening. For example, ‘*Can you fit another one on top?’ or ‘That was a tricky one to balance. Well done’.* Describe position and size. For example, ‘*You’ve put the big block on top of the small block’.* When the tower eventually falls, encourage children to try again. For example, ‘*Crash! That was fun. Can we make it taller this time?*’  This activity has been adapted from [The Australian Parenting Website](https://raisingchildren.net.au/preschoolers/play-learning/low-cost-play-ideas/stacking-and-building-games).  Timer  Use a small egg timer or clock to help children develop a sense of time and help them understand how long a task will take or how long they will need to wait. Describe time in scaled terms. For example, ‘*There* *is only a small amount of time left to pack up so that means we have to move quickly’ or ‘We have a lot of time left’ or ‘We do not much time left to be in the sand. . .’*  Use words mathematical words such as tall and long, big and small to describe the attributes of shapes. | Sorting There are many opportunities at home to sort everyday items into groups. For example:  Sorting folded washing into piles that belong to the different people in the house.  Sorting groceries – all the things that belong in the fridge, all the things that belong in the bathroom, all the things that belong to the dog.  Sort the groceries into different colour or sizes.  Sort the cars and trucks into different colours.  Sort the knives, forks and spoons as they come out of the dishwasher.  Sort toys. For example, by favourites, all the dolls, all the teddies, all the cars or all the animals.  Create categories that reflect children's experience. For example, things that belong to me, my sister, the dog etc. Change and add to the categories to extend children’s thinking. |
| Educator Led Learning | | |
| Games with dice and spinners Use a large die, with dots, to support children beginning to recognise numbers. Match this with a spinner featuring different actions so that children can be introduced to the concept and language of probability.  Use a spinner with several different movements featured. For example, jumping, hopping, stretching, kicking, bending etc.  Use the die to decide how many of those movements children will make. For example:  *Ruby rolled a three and Max ‘s spin landed on jumping. That means we jump three times. Ready set go – one jump, two jumps, three jumps.* | Growth Chart Use a growth chart to measure marks on a wall that represent children’s growing height across the year. Puzzle Puzzles offer children opportunities to match shapes and sizes. Make a body Provide an opportunity for each child to make a paper cut out of their own body.  For this experience children will need to lie down on a large piece of paper while the educator draws around them. Children can help cut out and paint their body. Once all the cut out bodies are completed talk about the different sizes and shapes of each of the bodies. For example:  Who is the tallest and who is the shortest?  Who has the longest feet?  Who has the shortest legs?  Making robots  Invite children to design and construct a robot using shapes. in this experience children are asked to draw the design of their robots first and then using a range of shapes, they construct the robot. Extend this activity by asking children to make a 3D model from the same design. Shape yoga Use yoga poses to encourage children to form their bodies into different shapes and freeze for periods of time while making the shapes.  For example:  Downward-Facing Dog Pose – Triangle  Tabletop Pose – Square  Child’s Pose – Circle  Resting Pose - Star | Roll call When children arrive, ask them to take their photo out of a bowl or basket and place it on a board to indicate that they are present. At the end of the day, they take their photo off the board and put it back in the bowl or basket. By doing this, children are learning about sorting and classifying in meaningful ways. Guessing game Play a guessing game using items hidden in a cloth bag or basket covered with a tea towel. Children can either feel the object and talk about its attributes and what it might be or they can guess in response to questions from educators. For example:  *‘What do you think is in the bag?’*  *‘Could it be a dog? What sound does a dog make – let's listen can we hear a dog barking?’*  *‘What else could it be?’*  *‘Do think it might be something you could eat?’* Sinking and Floating Experimenting with things that might sink or float is a useful way to encourage children to think about the attributes of an object and the probability of whether something will happen or not.  Educators can collect a number of items that will float and some that will sink. For example:  Rocks  Leaves  Feathers  Marbles  Utensils  Blocks  Include items that might look like they will float or sink but do the opposite such as coins or big pieces of wood and use a container where the bottom can be clearly seen.  Ask children to think about which ones they think will sink and which ones they think will float before putting them to the test.  Invite children to find out what happens when they are placed in water. Children can be asked to think about what might happen before they try.  Use questions and statements such as:  *‘Do you think this one will float or sink?’*  *‘Remember floating mean it will stay on top of the water and sinking means it will drop to the bottom of the container.’*  *‘Why do you think that?*  *‘What makes this one sink? What makes this one float?’*  Things that are less dense than water will float. Many hollow things like empty bottles, balls, and balloons will also float. Things that are denser than the water will sink. A coin has greater density than water so it will sink.  As the items are tested, help the children record which group each of the items belongs.  This experience can be tailored for younger or older children by extending the thinking and documenting what children discovered about why things either sink or float.    How many sounds or letters in my name?  In this experience children are invited to work with simple bar graphs or tables the sounds or letters in their names. Educators will need to construct the graphs or tables. Markers or stickers could be given to the children to add their data to the display.  For example, create a graph to show the types of fruit that children bring over a week. Children can add a tick to or stick a shape onto in the relevant section of the graph as the week progresses to indicate which fruit they brought each day.  A ‘name’ graph works in a similar way.  Firstly, introduce the concept of syllables in children’s names and graph them. For example, ‘*Let’s clap your name: ‘Ai sha’ (2), ‘Ar-cher(2) ‘Ol-i-ver’ (3), ‘Mi-a’(2)’*  Next try with the letters in their name. Each child (some will need support) writes their name in the graph providing an opportunity to discuss number and the comparison between names in the group. |
| Helpful resourcesThe Australian Parenting Website [The Australian Parenting Website](https://raisingchildren.net.au/babies/play-learning/learning-ideas/early-numeracy) provides ad-free parenting videos, articles and apps backed by Australian experts. Babies and toddlers: Amazing learners The [Babies and toddlers: Amazing learners](https://www.vcaa.vic.edu.au/curriculum/earlyyears/ey-curriculum-resources/birth-to-3/Pages/Birth-to-3years-Babies-Toddlers.aspx) resource is a set of three videos that showcases selected examples of significant learning in the birth-to-three-years age group. The aim is to make babies’ and toddlers’ learning visible and, by doing so, to expand awareness and appreciation of it. As a result, professionals will observe more closely and reflect on what babies’ and toddlers’ behaviour might mean. They will also adopt an image of babies and toddlers as capable and competent learners and enact this image in their work. For additional advice download the [Babies and toddlers: Amazing learners](https://www.vcaa.vic.edu.au/Documents/earlyyears/BabiesToddlersbookletweb.pdf) information booklet. Zero to Three The [Zero to Three](https://www.zerotothree.org/resources/299-help-your-child-develop-early-math-skills) website is a parenting resource to support home-based learning opportunities to help the development of numeracy for young children.   ABC Early Education The [ABC Early Education](https://www.abc.net.au/abckids/early-education/stem/) website provides a collection of resources that support educators to select children’s shows and podcasts with a focus on STEM (Science, Technology, Engineering and Mathematics) including questioning, investigating, experimenting and making exciting discoveries about our earth and amazing built environment. Everyday Maths Animations [The Everyday Maths Animations](https://fuse.education.vic.gov.au/ResourcePackage/LandingPage?ObjectId=7a9a8d7d-8b9e-4694-a86a-3f358d8c5bc6&SearchScope=All) are a set of three animations to support families to engage in conversations about mathematics and numeracy in everyday activities. Make everyday activities an opportunity for learning about Maths. It is easier for children to understand maths when they relate it to something real and see it as part of “everyday life”. This set of three animations is designed to support families to bring mathematics and numeracy into conversations in the home, the supermarket and the outdoors. Victorian Early Years Learning and Development Framework Illustrative Maps The [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. | | |