



The Numeracy Project

Some Ideas For Helping Your Child With Number Knowledge

Go to www.nzmaths.co.nz (click on the families link)

Activities to do at home with Emergent children (Stage 0):

At this stage counting is the most important skill to master. Counting is learnt through repetition, so take lots of opportunities to rote count (just saying the numbers) and counting objects. Count with your child, and help them count up to 20, or demonstrate it to them so that they hear the patterns of the numbers. Children can begin to explore the number of fingers on their hands and show numbers to 5 on them, perhaps more.

Practise counting up to 10 e.g number rhymes "Ten Little Indians", "Once I caught a fish alive" etc.

Practise counting down from 10 e.g a rocket blasting off. "Ten Fat Sausages" song.

Watch Sesame Street, Hi 5, Bumble and other children's programmes. Often there is a counting or a number focus.

Count groups of objects e.g how many knives, forks, spoons on the table, buttons on shirts, counting the number of stairs you're walking, counting how long it takes to do things e.g. to walk to the door, get undressed for a bath, have a drink.

Look at the calendar to see the number today is. What number was it yesterday? What will it be tomorrow?

Look at the numbers on letter boxes.

Learn the child's phone number and read it as well.

Practise showing numbers on fingers e.g "Show me 5 fingers (hi five!), show me 2 fingers," etc.

Play 'Snap', roll dice and dominoes - these help the children count in a fun way and see similarities.

Matching words 1:1 with objects e.g. sultanas, plates etc

Making sets of objects and numbers with playdough - read the numbers, count the sets

Activities to do at home with One to One Counting children (Stage 1):

These children can count a small group of objects but have not yet learnt to add two numbers together. At this stage finger patterns to 10 are a very important tool to have (you always carry your fingers with you and don't need a container of counters). Support your child with these activities. They are not yet ready to do them by themselves.

Continue becoming proficient at showing numbers to 10 on fingers. "Show me 5 fingers (high five!), show me 7 fingers," etc. (make sure you use a whole hand of 5 and then add on 2, rather than combinations of 3 and 4. Children need to see 5 as a complete set)

"Show me 3 fingers on one hand and 2 fingers on the other hand. How many altogether?" (Help the child count from one to find out. They will not yet be able to start from 3 and count on).

Show the child 5, 3, 7, 8, etc fingers on your hands and see if they can tell you how many there are. As they get more proficient at this they may recognize patterns instantly. *Build up to five fingers on one hand first, then some more e.g 7 will be one whole hand and 2 more. This helps the children see patterns more quickly and will link to the tens frames and other representations of numbers by building to 5 first at school.*

Three big plates on the table and three small plates. How many plates altogether?
(Count from one)

Practise counting up to 10 e.g number rhymes "Ten Little Indians", "Once I caught a fish alive" etc.

Practise counting down from 10 e.g a rocket blasting off. "Ten Fat Sausages" song.

Look at the calendar to see the number today is. What number was it yesterday? What will it be tomorrow?

Look at the numbers on letter boxes.

Learn the child's phone number and read it as well.

Use everyday happenings to discuss numbers - counting people, food, cars in the driveway, wheels on the cars, etc.

Include subtraction with addition. We have 9 muffins. How many will be left when we have eaten 2? Find out by eating 2 muffins to see if you were right!

Halve and quarter oranges and apples and name the pieces. Count how many quarters there are in two apples when cut, etc. Use the language of 'half' and 'quarter'

Activities to do at home with Counting From One on Materials children (Stage 2):

These children can now solve addition and subtraction problems to 10 using their fingers, by counting from the first finger. They now need to learn to hold an image of these numbers in their head. They will need patience and support to do this. They can now explore problems with bigger numbers - to 20, and start to group objects into tens to learn about our place value system.

Cut up an old calendar month so that you have the numbers to 31. Help the child to reassemble the numbers into the right order (you could start with smaller sections first e.g 1 - 10, 1 - 20, etc) Use a complete page of a month to check whether it's correct, or use a complete month to use as a guideline. Count the numbers and point to each number in order. Count backwards while pointing to the numbers. Cover up some numbers and see if the child can tell you what they are. E.g. cover 15. The child might count from one to find out, or just know. Uncover the number to see if they were right.

Use fingers to learn the groupings to 5. e.g 2 and $_?$, 4 and $_?$, 3 and $_?$ And groupings to 10: "How many more do we need to make ten? We have 6; we have 8; we have 2, etc"

Pizza night! "We have 2 pizzas cut into 6 pieces each. How many pieces altogether? How many will the 4 of us have each if we share them evenly?" Do it with your child to find out.

"Nana gave us 20 lollies. Two people will get half each. How many is half of 20?" Share the lollies out to find out.

Use fingers to solve addition and subtraction problems to 10, then when really good at that, do it on your fingers behind your back. Check if you're right by looking at the fingers afterwards.

Activities to do at home with Counting From One by Imaging children (Stage 3):

*These children can now hold numbers in their heads without having to look at all the objects and need to learn to **count on** e.g $9 + 4$ - is 10, 11, 12, 13 (counting from the 9 now and not from one) and **back down** for subtraction e.g $12 - 3$ is 11, 10, 9. It is important that the second number added is no bigger than 4 while learning this skill, as it is the optimum number that can be kept track of in their head. Children can keep track of what they're adding on either by their fingers or in their head.*

Count with or for your child in 10s to 100, 2s to 20 or more, 5s to 50 or more. Then back again. Write the numbers down so the child can use them as a guide. Keep skip counting in 2's, 5's 10's etc. To work out three 2's, use fingers to track - 2, 4, 6. Or use pictures cut out and group into twos etc.

Board games e.g snakes and ladders, etc help counting on because the child moves the counter from the number they're on (at earlier stages children want to move right back to one each time they have a turn as they don't yet understand about 6 more, 4 more, etc)

Bundle iceblock sticks with pipe cleaners into 10s, or haricot beans (uncooked!) into empty film canisters (these are often freely available at photo shops) to see how many there are. Count the 'tens' in tens and the ones left over in ones. Start with numbers up to 40 or so. Start calling the bundles of ten 'a ten'. "Let's get 30 sticks. How many bundles of 10 will that be? How many tens have we got here? How many is that altogether?"

Play a game with 2 dice and the iceblock sticks or haricot beans and film canisters. Roll the dice and work out how many has been thrown. Collect that number of sticks or beans. The rule is that every time you have ten they must be bundled up or put in the canister. Keep playing and see who gets the most. (*Often interesting talk will be generated by this game as the children work out who has got the most, how many more they need to have the same number, etc. As adults we can generate this talk without dominating the game too much, to keep the game fun.*)

Activities to do at home with Advanced Counting children (Stage 4):

These children are now heading towards the transition to Part-Whole thinking (splitting numbers apart). They may have trouble believing there are strategies beyond 'counting on', as counting on is a milestone in itself and the children are often very proud they have reached this stage! We now need to let them know that they're very clever at counting on, but now they need to use the knowledge they have of numbers to try to use other clever ways to add numbers.

This is a very difficult and lengthy transition to make so remain patient and support the child's efforts. It may take a while.

Part-Whole thinking is the ability to split numbers into parts and rejoin them to solve sums, without having to count on or back in ones, etc.

E.g working out $9 + 4$ by just knowing that $9 + 1 = 10$, so we can take one from the four and add it to the 9, making ten, then we'll have 3 left.

Or, $8 + 7 = 15$ because if I know that $8 + 8 = 16$ off by heart, I can take one off to get the answer, because 7 is one less than 8.

So in order to use the above strategies the child needs to have certain knowledge

e.g Know their doubles to 20 off by heart ($6 + 6$, $7 + 7$, $4 + 4$, etc)

Know combinations to 10 off by heart ($7 + 3$, $2 + 8$, $9 + 1$, etc)

Know $10 +$ some more off by heart ($10 + 2 = 12$, $10 + 6 = 16$, etc)

When playing board games see if the child can work out which number they're going to land on without having to move space by space. E.g I'm on 26 and I've thrown a 5. Where will I land? Games such as Ludo and backgammon can involve split moves. E.g instead of moving one counter 6, they could move another counter 4 and another 2.

Continue playing grouping to 10 games with iceblock sticks or haricot beans, etc (mentioned in 'Counting From One By Imaging' section.) Try using 3 dice to make adding the totals a little more challenging.

Board games could be played using two multi-sided dice so that the children are adding bigger numbers together.

Practise basic facts - doubles ($4 + 4$, $9 + 9$, etc), facts to 20 (e.g $16 + 4$, $2 + 12$, $9 + 11$)

Practise counting forwards to 100 and back to 0 again (or lower!), counting in 2s 5s 10s, 3s

Use the odometer reading of the car to practise reading large numbers. See how many kilometers were travelled on a long trip.

Encourage children to read time.

Ask time based questions - how long till bedtime? How long is this TV programme?

Activities to do at home with Early Additive Part-Whole children (Stage 5):

Early Additive children have now become capable of part-whole thinking. Part-Whole thinking is the ability to split numbers into parts and rejoin them to solve sums, without having to count on or back in ones, etc.

E.g working out $9 + 4$ by just knowing that $9 + 1 = 10$, so we can take one from the four and add it to the 9, making ten, then we'll have 3 left.

Or, $8 + 7 = 15$ because if I know that $8 + 8 = 16$ off by heart, I can take one off to get the answer, because 7 is one less than 8.

The language of maths is extremely important, especially now as they are developing many strategies for solving problems. Encourage your child to explain their thinking clearly to you so you can see the different ways they are thinking.

Car journeys - we've travelled 25 km today. If we travel that far tomorrow, how far will we have gone? If we'd stopped 8 km back, what would the odometer reading be? (Children at this stage might mentally solve the problem by using $25 - 5 - 3 = 17$. Taking away 5 first takes us to a 'tidy' number of 20, then their basic fact knowledge should help them know that $20 - 3 = 17$. Because they are part-whole thinkers they know that the 8 can be split into 5 and 3 to make working out the problem easier.)

Explain to your child the strategies you are using to work things out as they occur. You may be surprised by the number of mental strategies you have. See if your child can use your strategy and you use theirs. See if they can think of other ways it could be worked out. E.g. when shopping, you may have bought something for \$12 and something for \$9. How would you work out the total in your head? You may know that \$12 and \$8 is \$20, then one more is \$21. Or that $\$9 + \$9 = \$18$, and \$3 more is \$21.

Children at this stage need to learn a lot about the Base Ten nature of our number system. Continue playing grouping to 10 games with iceblock sticks or haricot beans, etc (mentioned in 'Counting From One By Imaging' section.) Try using 3 dice to make adding the totals a little more challenging.

Continue checking doubles to 20 ($4 + 4$, $9 + 9$, $14 - 7$ etc) have been remembered and facts to 20 (e.g $16 + 4$, $2 + 12$, $9 + 11$, $17 - 4$)

Practise automatically knowing facts from the 2, 5 and 10 times tables (multiplication and division), and beginning to learn counting patterns and groupings for the others e.g 3's, 4's etc, forwards and backwards.

Take opportunities to share your maths strategies with your child and encourage them to share their own. Play board games and card games together- crib, 500, Yahtzee, Monopoly etc.

Ask your child to show you how to play some of the games they play in class as warm ups.

Read time, both digital and analogue (clock face).

Bake and have children become familiar with measurements.

Never say "I was no good at maths at school". This gives children the idea that maths is not fun or interesting and could affect their attitude. Even if we as adults have negative memories of maths, we should try to be positive about it. Remember, the way we were taught is quite different to the way maths is taught in schools today. And you may be far better at maths than you realise!

Activities to do at home with Advanced Additive Part-Whole children (Stage 6):

Advanced Additive children use a variety of ways to solve and estimate the answers to addition and subtraction problems. They see numbers as whole units in themselves but are also able to split numbers up and see lots of possibilities for subdivision and recombining.

Children working at this stage need lots of reinforcement of their basic facts both in addition, subtraction, multiplication and division.

Make small flash cards of all the basic facts (addition and subtraction, multiplication and division) and then put them into piles of those you know and those you don't know. Work on the pile you don't know, gradually getting that pile less.

Continue reading large numbers up to trillions. Use the odometer of the car, the power meter box etc and read these numbers. What is one more? One less? Ten more? Twenty more? A hundred less? A hundred more?

Gather some decimal numbers from magazines, newspapers, advertising flyers etc. Place these in order. Be careful to use more than just prices. Do the same with fractional numbers.

Ask time questions relating to quarters past and quarter to.

Bake and have children become familiar with measurements.

Use the car sales pages or house sale pages in a Saturday paper and get the children to say and then order some large numbers. Which is the most expensive car? The cheapest?

Lots of money activities. Children are very capable at this level of working out change, adding up items, seeing how much, for example, 5 items at \$8.30 will cost. How much change would I get from \$75?

Activities to do at home with Advanced Multiplicative Part-Whole children
(Stage 7):

Advanced Multiplicative Part-Whole thinkers use a variety of ways of partitioning, manipulating and recombining numbers to solve problems.

Using flash cards of the basic facts get the children to state what the basic family of facts are.

$8 \times 4 = \square$	$\square \times 4 = 32$	$4 \times \square = 32$
$4 \times 8 = \square$	$\square \times 8 = 32$	$8 \times \square = 32$
$32 \div 4 = \square$	$\square \div 4 = 8$	$32 \div \square = 4$
$32 \div 8 = \square$	$\square \div 8 = 4$	$32 \div \square = 8$

Use addition and subtraction facts as well.

$3 + 6 = \square$	$\square + 6 = 9$	$3 + \square = 9$
$6 + 3 = \square$	$\square + 3 = 9$	$6 + \square = 9$
$9 - 6 = \square$	$\square - 6 = 3$	$9 - \square = 3$
$9 - 3 = \square$	$\square - 3 = 6$	$9 - \square = 6$

Gather some decimal numbers from magazines, newspapers, advertising flyers etc. Place these in order. Be careful to use more than just prices. Do the same with fractional numbers.

Use the car sales pages or house sale pages in a Saturday paper and get the children to say and then order some large numbers. Which is the most expensive car? The cheapest? What is the difference between the two?

Encourage talk of temperature. Listen on news, look for in newspapers etc

Distance discussions when traveling e.g. How long will it take me to drive 371 km if I am traveling 320 km at 100km/h and the rest at 50 km/h

Percentages when shopping. If you are looking in Briscoes at an item that is marked 30% off, how much will I pay? or What is 240/400 as a percentage?

Activities to do at home with Advanced Proportional Part-Whole children
(Stage 8):

Advanced Proportional Part-Whole thinkers find solutions using common factors, the multiplication of decimals and the calculation of percentages. These thinkers can find the relationship between two different measures.

Children should be encouraged to say decimal word sequences counting forwards, backwards by the thousandth, hundredths, tenths, ones, tens etc, starting at any decimal number

Children need to practice saying the number one-thousandth, one-hundredth, one-tenth, one, ten, etc before and after any decimal number.

Gather some decimal numbers from magazines, newspapers, advertising flyers etc. Place these in order. Be careful to use more than just prices. Do the same with fractional numbers.

Use the car sales pages or house sale pages in a Saturday paper and get the children to say and then order some large numbers. Which is the most expensive car? The cheapest? What is the difference between the two? What would the remaining price be if I paid 20% deposit? What if I paid $\frac{1}{4}$ cash, $\frac{1}{4}$ was the amount I got for a trade in for my old car, and I had to pay the last $\frac{1}{2}$ off at 13% interest?

Some Questions You Can Ask Your Child's Teacher to Support Your Child's Learning

What is my child learning now?

What will they be learning next?

What is my child good at?

Are they struggling with anything?

How do you know this?

Are there games I could play to reinforce this?

What can I do to help my child progress?

Can I see some of my child's work?