

Supporting your children in Mathematics

What your children need to know and
how to support them

Newstead Parent Afternoon Years 0-3
June 11 2018

1,2,3 Fists - Paper, Scissors, Rock

Two players

Play as for Paper, Scissors, Rock

One or two hands

Count 1,2,3, put down some fingers

- add together
- subtract the biggest number from the smallest number

THE GOAL OF OUR MATHS CURRICULUM

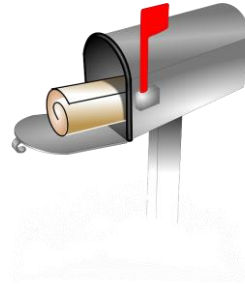
We want our children to have 'number sense' and to be numerate.

“to be numerate is to have the ability to use mathematics effectively in real life– at home, at work and in the community”

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Published in Curriculum Update 45:

When do you use maths in your life?



Jo Boaler says.....

How we Learn



1

Encourage children to play maths puzzles and games. Award winning mathematician, Sarah Flannery reported that her maths achievement and enthusiasm came not from school but from the puzzles she was given to solve at home. Puzzles and games – anything with a dice really – will help kids enjoy maths, and develop number sense, which is critically important.

2

Always be encouraging and never tell kids they are wrong when they are working on maths problems. Instead find the logic in their thinking – there is always some logic to what they say. For example if your child multiplies 3 by 4 and gets 7, say – Oh I see what you are thinking, you are using what you know about addition to add 3 and 4, when we multiply we have 4 groups of 3...

3

Never associate maths with speed. It is not important to work quickly, and we now know that forcing kids to work quickly on maths is the best way to start maths anxiety for children, especially girls. Don't use flashcards or other speed drills. Instead use visual activities such as <https://bhi61nm2cr3mkdggk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2015/03/FluencyWithoutFear-2015.pdf>

4

Never share with your children the idea that you were bad at maths at school or you dislike it – especially if you are a mother. Researchers found that as soon as mothers shared that idea with their daughters, their daughter's achievement went down.

5

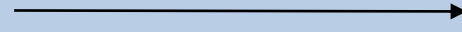
Encourage number sense. What separates high and low achievers is number sense – having an idea of the size of numbers and being able to separate and combine numbers flexibly. For example, when working out $29 + 56$, if you take one from the 56 and make it $30 + 55$, it is much easier to work out. The flexibility to work with numbers in this way is what is called number sense and it is very important.

6

Perhaps most important of all – encourage a “growth mindset” let students know that they have unlimited maths potential and that being good at maths is all about working hard. When children have a growth mindset, they do well with challenges and do better in school overall. When children have a fixed mindset and they encounter difficult work, they often conclude that they are not “a math person”. One way in which parents encourage a fixed mindset is by telling their children they are “smart” when they do something well. That seems like a nice thing to do, but it sets children up for difficulties later, as when kids fail at something they will inevitably conclude that they aren't smart after all. Instead use growth praise such as “it is great that you have learned that”, “I really like your thinking about that”. When they tell you something is hard for them, or they have made a mistake, tell them: “That's wonderful, your brain is growing!”

Creates new knowledge through use

Strategy



Knowledge



Provides foundation for strategies

Strategy is about how children solve number problems; in particular, the mental processes they use eg Eddie has 5 Little Gardens and his sister has 6 Little Gardens. How many is that altogether?

Knowledge considers the key facts that children need to know eg $5+5=10$

NUMERACY STAGES

Emergent

One to One Counting

Count from one **(end of Year One)**

Advanced Counting **(end of Year Two)**

Counting
Strategies

Early Additive Part-Whole **(end of Year Three)**

Advanced Additive Part-Whole

Advanced Multiplicative

Advanced Proportional

Non Counting
Strategies

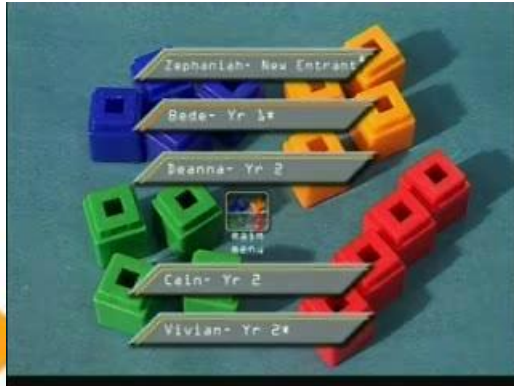
Emergent



One to One Counting



Counting from One to Join two sets:



Counting on from the biggest number to join two sets:



Ideas to get children counting and joining sets...

- Number of white cars and red cars we see on our trip. Trucks and boats. Tally marks.
- Get them to count sets of objects.....number of white cars we see on our trip, leaves on the ground, clothes on the floor, towels in the wash
- Two biscuits for each child. How many biscuits altogether? How many are left in the packet?
- Set the table – how many knives and forks are there?
- Collecting eggs- how many today? How many chooks did not lay an egg? How many from today and yesterday?
- Baking baking baking
- Adding the number of things in story books
- Anything that interests them eg Little Gardens, how many have grown? Toys?
- 6 boys and 5 girls. How many children is that?
- Money – give them cash. How much for 2 spinning tops? How much change?
- Doing jobs for money : \$ 5 to wash the car. What if you washed it every week for 4 weeks?
- Saving money from jobs and birthdays, spend some money – how much is left?
- Sports scores and differences, sharing things between siblings, card games, board games.
- Roll 2 dice and add the scores
- Turn over 2 cards and add the scores. Who got the highest score?

Your ideas.....

SUPPORT with KNOWLEDGE

Developing a child's knowledge is a key to their success and development in mathematics.

Doubles

Doubles to 10, then doubles to 20 – dice, fingers, bead frame

Counting

- Cars, shells on beach, pegs, pigs, minutes, seconds, how many steps you walk, count backwards, start from different numbers, things in story books, skip counting in 2s 5s 10s

Numbers before and after

- Letter boxes, say a number, use a number line, use number cards, 100s board, write a number down, snakes and ladders, board games, using dice

Identifying and ordering numbers

- Letter boxes, number plates, speed signs, recipes, netball score, number cards
- Number cards, write some numbers down and get children to put them in order

KNOWLEDGE TO DEVELOP:

- Facts within 5 ($1+3=4$, $4+1=5$, $5-3=2$ etc)
- Doubles to 10
- Facts within 10 ($5+2=7$, $3+5=8$, $9-3=6$ etc)
- Facts that add to 10 ($10+0$, $9+1$, $8+2$, $7+3$, $6+4$, $5+5$... Look for patterns)
- Doubles to 20
- Ten and ...($10+1=11$, $10+2=12$, $10+8=18$ etc)

[Jo Boaler mindsets and fingers](#)

Place Value : how many 10s and 1s are in a number – Counting Collections by grouping in 10s

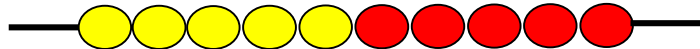
Counting Collections



BECOMING A PART-WHOLE THINKER

- Knowing groups to ten
 - Tens frames, fingers, equipment
- Basic addition facts to ten
 - Cards, dice, tens frames, fingers

- Recall of doubles



- Ten and...facts ($10 + 6 = 16$)
- Making, adding and subtracting numbers within 100 eg $25 + 24$

$$20+20 = 40$$

$$5+4= 9$$

$$40 +9 = 49$$

Ten frames

●	
●	
●	
●	●
●	●

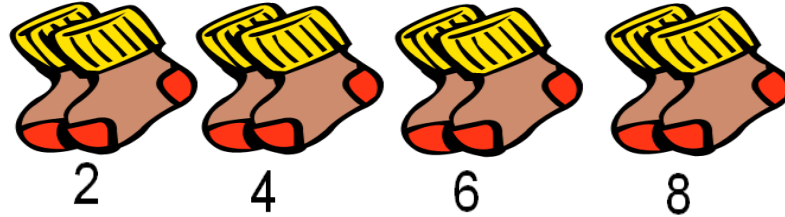
Addition and Subtraction

- Sarah has 5 flowers and then she picked 6 more flowers. How many flowers in her bunch?
- Timothy has 8 green kiwifruit and 6 gold kiwifruit. How many kiwifruit is that altogether?
- Amy had 15 marbles but he lost 7 of them. How many marbles does he have now?

Early Multiplicative Thinking

Skip counting in twos up to 10 and then up to 20 (Year One and Two)

Introduce pairs to connect to counting in twos and groups of two. Socks, feet, shoes, gloves, eyes, ears.



Skip counting in 2s, 5s and 10s (Year Two) to solve word stories

Using 2,5,10 times tables and patterns to solve word stories eg 6×5 :

$5+5= 10$ $10+10 = 20$ $20+10 = 30$ (Year 3)

Arrays: biscuit packets, egg cartons, baking, 4 in a Row

Knowing and applying 2s,5s,10s basic facts to solve word stories (Year 4)

PROBLEM SOLVING WITH MULTIPLICATION

Hemi sets the table for 9 people. How many knives and forks will he need?



One sheep has 4 legs. How many legs do 4 or 6 sheep have altogether?





There are two rivers and 10 bears. How many
bears could be in each river?
Show your working out.



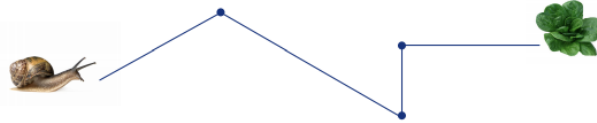
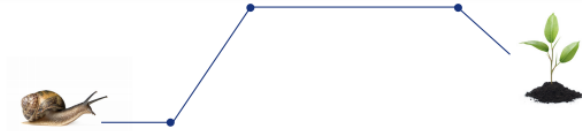


On the farm there are 11 chickens and 4 sheep. How many legs are there?



Snails

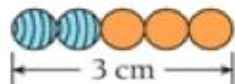
Sally the snail crawls 1 red block every 2 minutes. She needs to rest at each dot for 5 minutes. She wants to take the shortest time to reach a plant. Which path should she take?



What is the difference between the shortest and longest path?

- Liata wants to make the bead part of her bracelet 12 centimetres long.

- a. How many blue beads and how many orange beads should Liata buy?



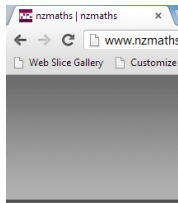
Times tables will help you
with these problems, too.

- b. Beads are 2 for 10 cents. How much money will Liata need to buy all the beads for her bracelet?



Nzmaths.co.nz

<https://nzmaths.co.nz/families>



Families



Introductory video

A video describing how you can support your child's learning in maths.



Maths at our house

Suggestions about ways that you can use everyday experiences and resources to explore maths.



Number Knowledge activities

Activities to help develop your child's number knowledge. They include related vocabulary in Te Reo Māori, and many of them include versions with key questions translated into Māori.



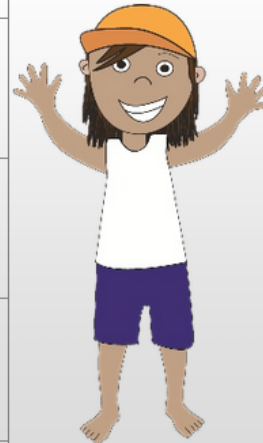
Maths kete

Ideas for making a collection of free or low-cost items that your child can use for exploring maths ideas.



Other resources

Links to other parts of the website that may be of use to you.



•Questions

