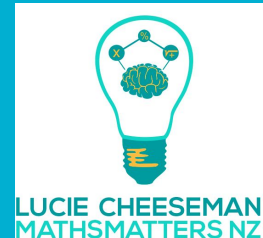
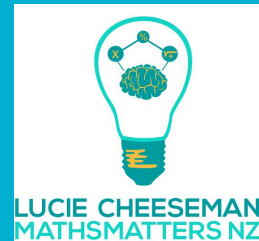


# Mathematics and 21st century learning

Lucie Cheeseman, Maths MattersNZ  
St Michaels Catholic School, July 2017



# Outline of the session

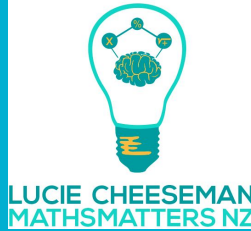


- How is Mathematics taught now?
- What are the characteristics of an effective mathematician?
- Problem Solving
- Helpful and practical ideas to support your child's learning in mathematics.

# Our aim

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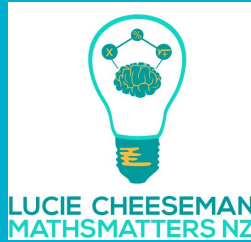
For all our students to be numerate.....



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

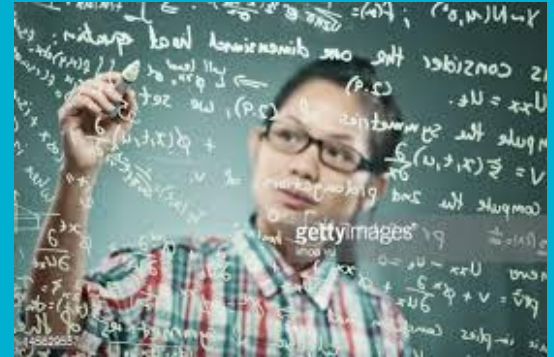
*Published in Curriculum Update 45:*

# But more than that.....



What do Mathematicians do?:

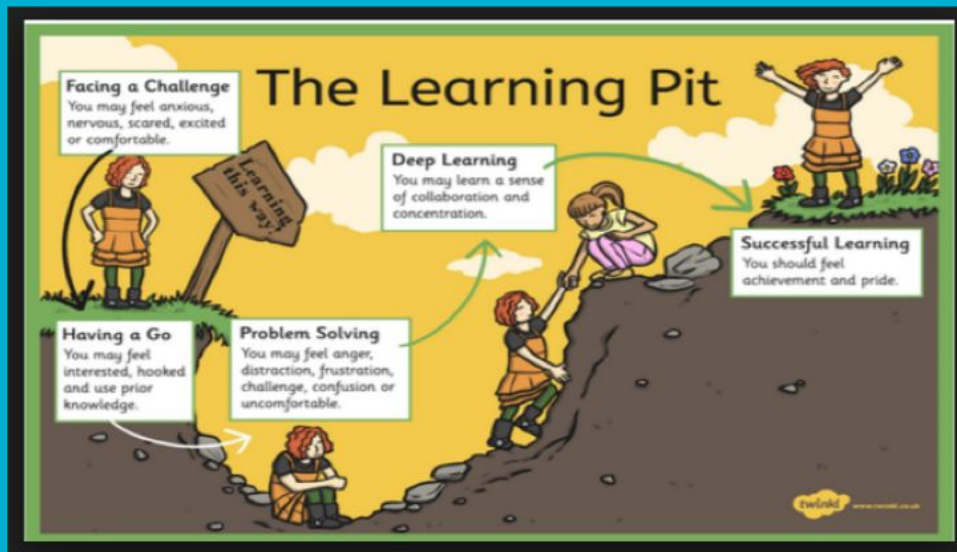
- They perform calculations
- They ask good, inquiring questions
- They propose ideas
- They connect different methods
- They use many different representations
- They reason



# Mathematicians make “terrific” mistakes



LUCIE CHEESEMAN  
MATHSMATTERS NZ



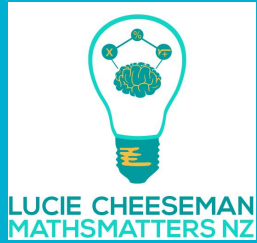
# The power of “yet”



<http://vid.ly/6n0j6o>



# Focus of teaching



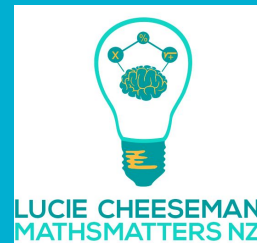
Focus on developing multiple flexible thinking strategies

- Mental and oral before written standard vertical forms
- Make decisions about the most efficient strategy to use on any given problem.
- See the purpose and relevance of mathematics in everyday life
- Challenge children to achieve and develop a

positive attitude towards learning mathematics.



# Your turn





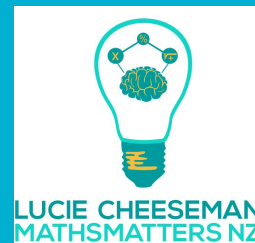
# Multiplicative Strategies



Charlie is planning the end of term celebration. He wants to make sure he has enough food and treats for all of the 120 students who will be attending. He has brought 4 family bags of chippies. Each family bag has 28 packets of chippies within it. Does he have enough packets for everyone to have at least one packet each? If not how many is he short?

Be prepared to explain your thinking.

# Multiplicative Strategies



**Rounding and  
compensating**

$$4 \times 30 = 120$$

$$4 \times 2 = 8$$

$$120 - 8 = 112$$

**I used  
doubling and  
halving**

$$8 \times 14 = 112$$

$$4 \times 28$$

**Place Value  
Partitioning**

$$4 \times 20 = 80$$

$$4 \times 8 = 32$$

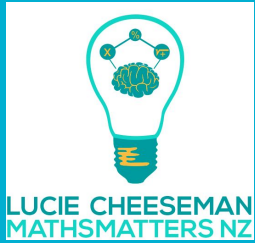
$$80 + 32 = 112$$

**I used repeated  
addition:**

$$28 + 28 = 56$$

$$2 \times 56 = 112$$

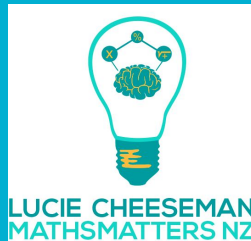
# Knowledge vs Strategy



- 



# The difference

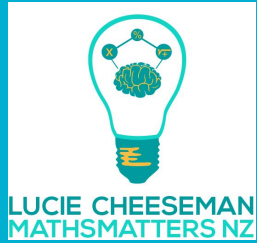


Number Identification,  
Number Sequence and Order,  
Grouping and Place Value,  
Basic Facts



Addition and Subtraction  
Multiplication and Division  
Fractions Proportions and Ratio

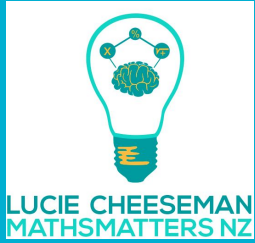
# Basic Facts



What are basic facts?



# Basic Facts



- We DO teach Basic Facts explicitly.
- It does have an extremely important role in children's development.
- We do however ensure that the conceptual understanding that underpins Basic Facts is understood very well first.
- There is a very clear sequence and progression when teaching this.



# How can you help?



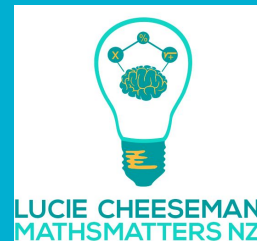
Developing a child's knowledge is the key to their success and ability to progress in mathematics.

But most important is to make the learning fun and as purposeful as possible.

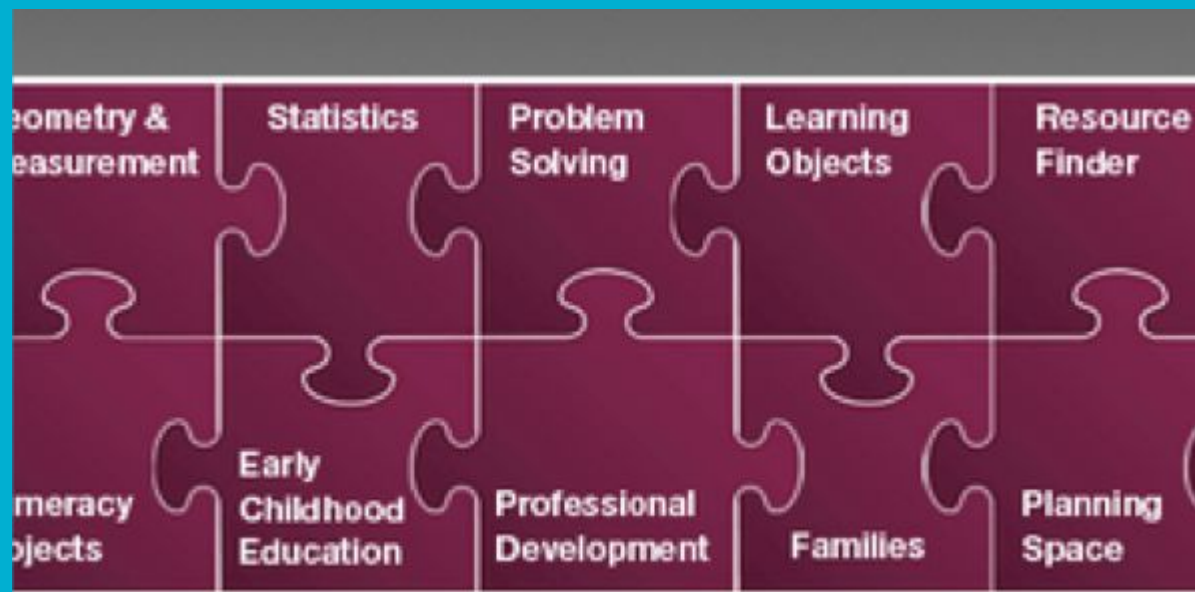
[www.nzmaths.co.nz](http://www.nzmaths.co.nz)



# [www.nzmaths.co.nz](http://www.nzmaths.co.nz)



- [www.nzmaths.co.nz](http://www.nzmaths.co.nz)





# 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.

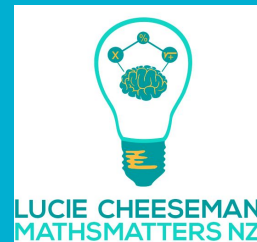


## Maths kete

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



# Knowledge Building



## **Counting**

(cars, shells on beach, pegs, run around the house, how many steps you walk, count backwards, start from different numbers)

## **Numbers before and after**

(Letter boxes, say a number, use a number line, use number cards, write a number down, ladder game, keyboard numbers, using dice)

## **Identifying numbers**

(Letter boxes, number plates, speed signs, how many km to go, number cards, combine numbers)

## **Ordering numbers**

(Number cards, write some numbers down)

# Memory



- Needs to be explicitly developed.
- Regular opportunities to build Memory skills should be exploited.
- Memory Match
- Board games
- Online
- Ipad / iphone activities.



# Memory



**Spot the difference.**

Start with the pictures side by side and then aim to move them to different sides of the classroom so that the comparison has to be held in the memory longer.



# Memory



- Simon Says
- Building sequential memory

