

Supporting Numeracy Learning
A Workshop for Parents and Carers
Monday 7th August, 2023

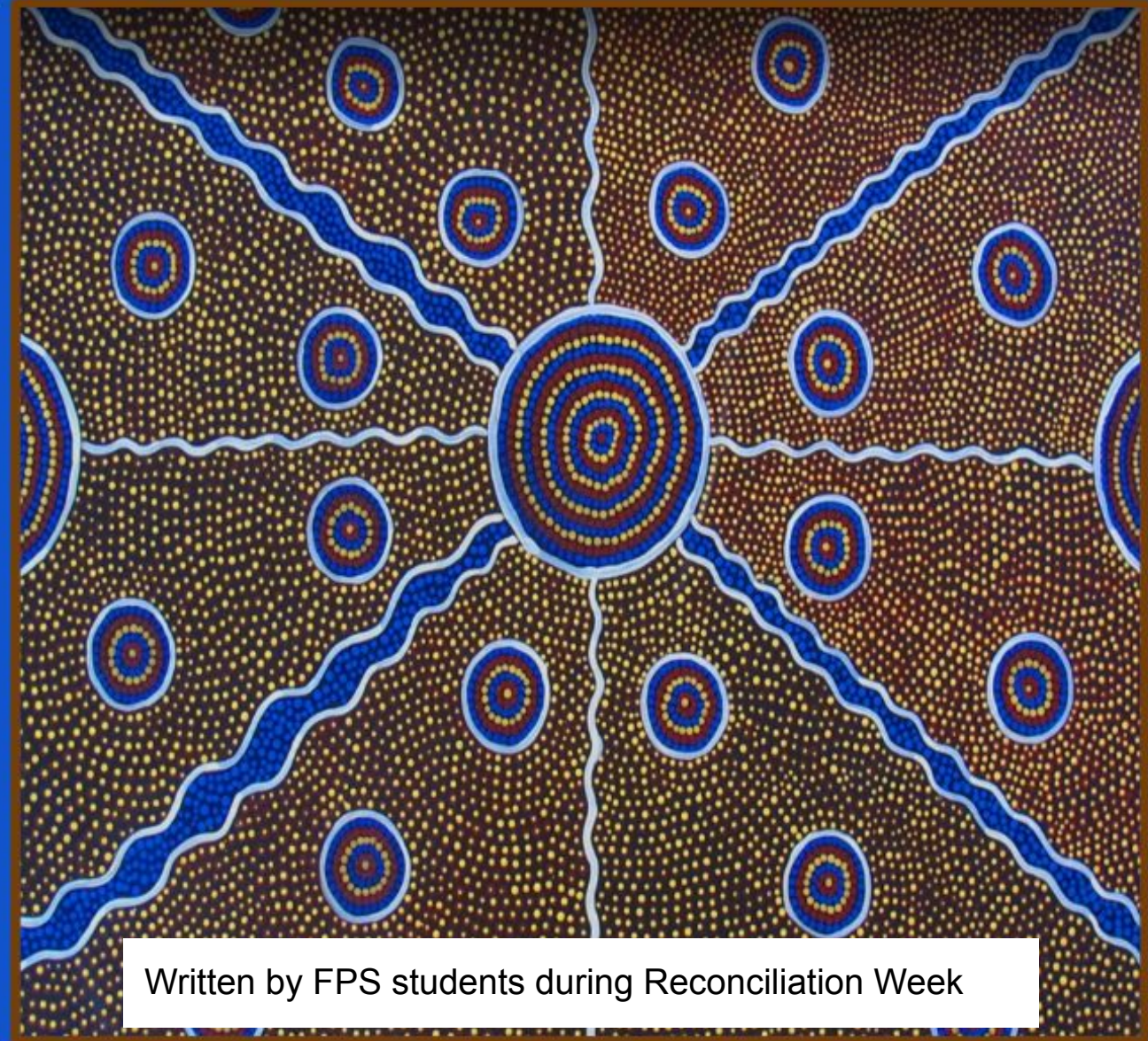
Be Ready to Learn **Be Respectful** **Be Safe** **Be Kind**

Flemington Primary School Acknowledgement of Country



Flemington Primary School would like to acknowledge, and say thank you to the traditional owners, the Wurundjeri, Woi Wurrung people because they took care of and share the land that we live, learn, make friends and play on. We promise that we will also take care of the trees, animals and waterways and protect this land.

We pay our respects to elders past and present and say sorry for the wrongs of the past.



Written by FPS students during Reconciliation Week



FPS Mission and Vision

Mission

We will provide learning opportunities in supportive and collaborative learning environments.

Vision

Students will realise their full potential, contributing to our school, our community and our world.

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2023 Annual Implementation Plan



DET 2023 Priorities Goal-Goal set by DET

In 2023 we will continue to focus on student learning - with an **increased focus on numeracy** - and **student wellbeing** through the 2023 Priorities Goal, a **learning** Key Improvement Strategy and a **wellbeing** Key Improvement Strategy

Goal: Numeracy & Literacy

Goal: Student agency in learning



Goal: Wellbeing

Be Ready to Learn

Be Respectful

Be Safe

Be Kind

Mathematics Education

What were your memories and/or feelings about Mathematics when you were at school.

- ▶ Where did the students sit?
- ▶ Where was the teacher?
- ▶ What activities did you do?
- ▶ What did your book look like?



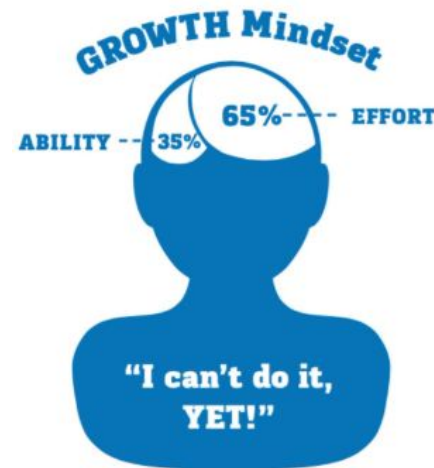
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Growth Mindset

Families are the first and most enduring influence on a child's development and play an important role in a child's learning.

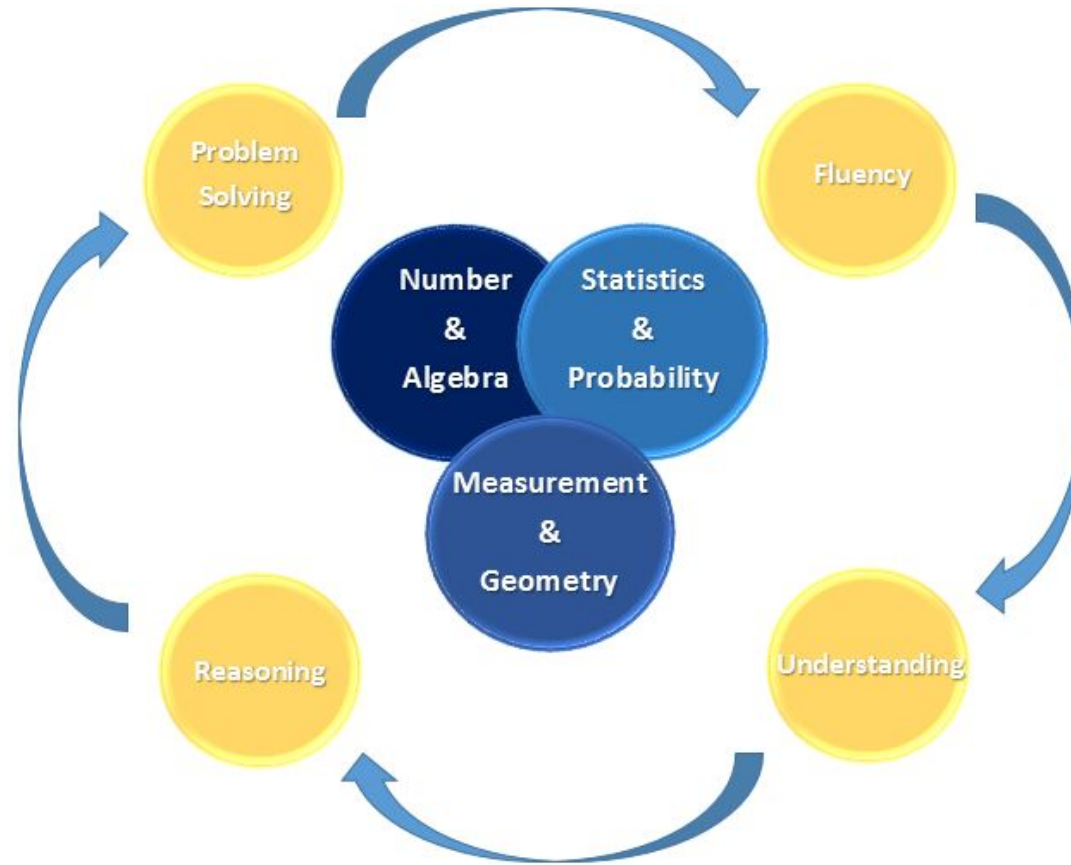
Developing strong skills in reading, writing and in numeracy is critical in making sure your child's success in early learning and beyond.

You can make a HUGE difference by supporting what your child learns at school and helping them to learn at home. The first step is modelling a positive attitude to numeracy learning!



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Mathematics in the Victorian Curriculum



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The Big Ideas in Number

- Trust the Count
- Place Value
- Multiplicative Thinking
- Multiplicative Partitioning
- Proportional Reasoning
- Generalising



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Trusting the Count

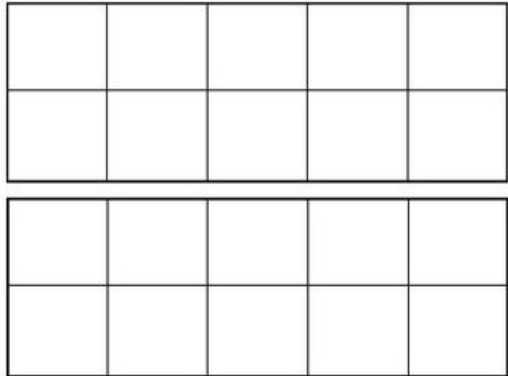
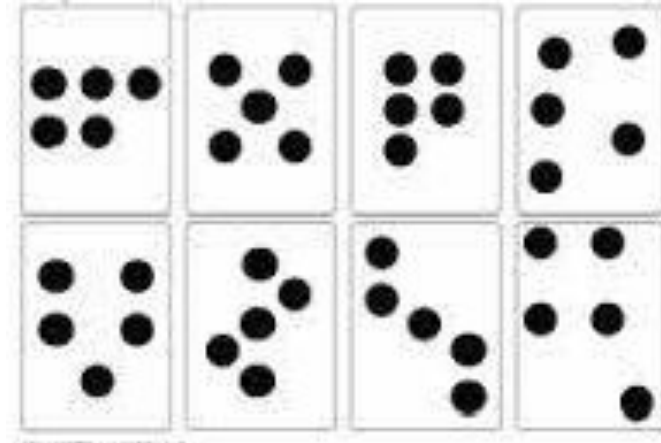


What it is	It is evident when a student demonstrates:
<p>'Knowing' numbers (part part whole) Subitising collections (know without counting) The link between counting and totals of collections Visual representations for all number to 10 Being able to use mental representations flexibly</p>	<p>Accurate counting One count for every one object (one to one correspondence) Everything being counted once but knowing the order doesn't matter Being able to work out a few more or less without recounting Trust that the last number counted represents the total Knowledge that a collection is unchanged even when objects move Ability to explain all numbers to 10 in terms of their parts Mental representations of all 1 digit numbers</p>

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Trusting the Count Activities

- Subitising Flash Cards
- Monster Cups - Gobble my number
- Fill my bucket (tens frames)



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Place Value



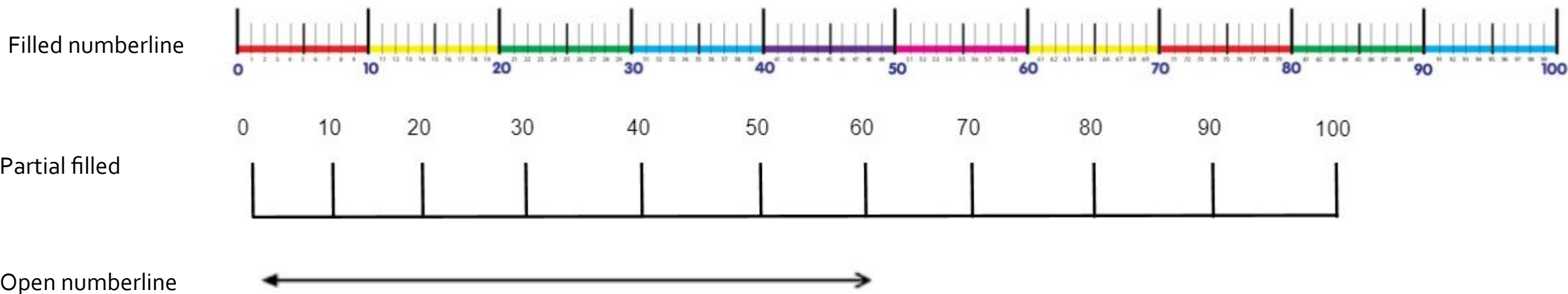
What it is	It is evident when a student demonstrates:
<p>Understanding that ten of these is one of those</p> <p>Naming, recording, representing and ordering numbers</p> <p>Size comparison</p> <p>Renaming</p> <p>Our base ten structure</p>	<p>Renaming numbers in multiple ways</p> <p>Accurately orders numbers and justifies why a number is smaller or larger</p> <p>Recognition of the difference between digits and numbers and the effect of changing a digit's place value</p> <p>Counting in place value parts</p>

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Place Value

- Race to 100 (tens frame and cups)
- Largest, Smallest and In between



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Multiplicative thinking



What it is

The key understandings that builds efficient mental and written strategies in later years
Mental images that represent multiplication beyond equal groups

It is evident when a student demonstrates:

- groups of equal size
- the number of groups, and
- the total amount.
- capacity to work flexibly and efficiently with an extended range of numbers
- ability to recognise and solve a range of problems involving multiplication or division including direct and indirect proportion
- the means to communicate this effectively in a variety of ways

This is a complex process and may take many years to achieve.

Multiplicative thinking

From Modelling to Abstracting

Multiplicative thinking begins to develop as each aspect (groups of equal size, the number of groups, and the total amount) is abstracted and can be dealt with as a mental object.

Modelled

Equal groups

Makes all and counts all

Abstracted

Trusts the count and sees equal groups as a composite unit

Number of groups

Sees in terms of each group, counts all groups. For example:

1 group, 2 groups, 3 groups, ...

Can deal with number of groups in terms of part-part-whole understanding. For example, 6 groups is:

- 3 groups and 3 groups, or
- 5 groups and 1 group.

Total

Arrived at by counting all and skip counting

Total is seen as a composite of composites. For example, 18 is seen as :

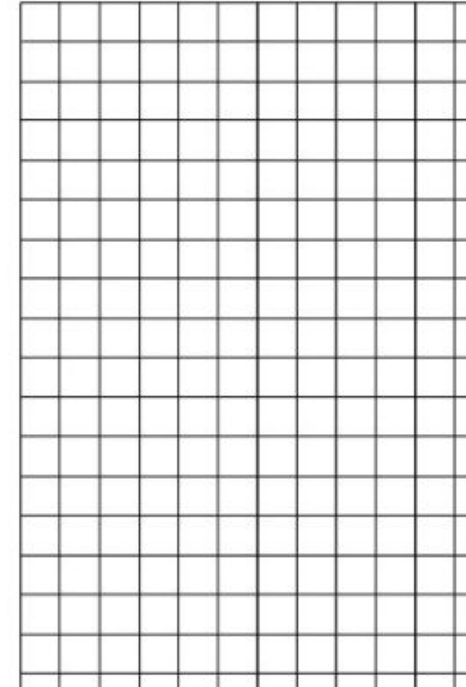
- 2 nines
- 9 twos
- 3 sixes



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Multiplicative thinking

- Cupcakes
- Crops
- Paddocks



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Multiplicative thinking



But what about times tables? We will get to that shortly!

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Partitioning

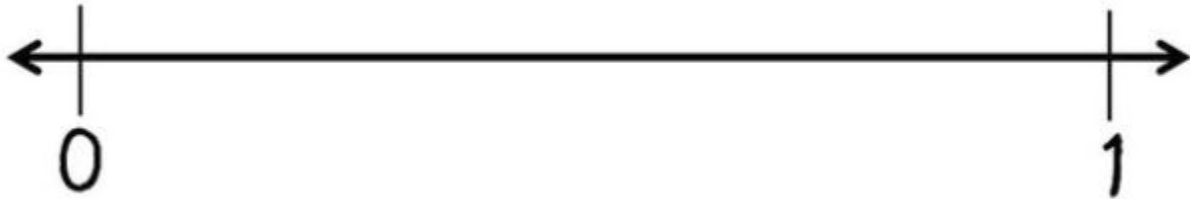


What it is	It is evident when a student demonstrates:
<p>Physically dividing region models or line segments into equal parts</p> <p>Building blocks of fraction and decimal knowledge</p>	<p>Ability to generate fraction models</p> <p>Explain the whole in relation to fractional parts</p> <p>Partition from a whole, fractional part or collection</p>

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Partitioning

- Number line wipe out (fractions and/or decimals)



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Number Facts



What it is

Addition and Subtraction facts relating to all 1 digit numbers
Count on
Doubles
Near doubles
Tens facts

Multiplication and Division facts relating to all 1 digit numbers
Doubles
Double and one
Double Double
Double Double and one etc
Thinking in tens
Halves of tens

It is evident when a student demonstrates:

The ability to recall all 1 digit addition facts up to $9+9$ and related subtraction facts and explain the strategy
Recall all 1 digit multiplication facts and related division facts and explain the strategy

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Number Talks



What is a number talk?

Number talks are short, 5-15 minute whole class discussions around a number problem. The focus of the discussion is on the many ways and strategies used to solve the problem, rather than on the answer and speed.

Why number talks?

- *Develop number sense focused on making sense of quantity and mathematical relationships.*
- *Understand that there can be many ways to solve a mathematics problem.*
- *Learn to trust their own reasoning, which helps build intellectual autonomy.*

(Humphreys & Parker, 2015)

Number talks ... increase student-centred thinking, giving value to strategies that students invent and that make sense to them. This approach contrasts with traditional maths sessions where teachers transmit knowledge to the student and where children are expected to learn the teacher's method, which may or may not make sense to them. The number talk strategy also connects well to the Australian Curriculum's 'Reasoning' proficiency strand, which prioritises analysing, proving, evaluating, explaining, inferring, justifying and generalising.

(Kathy Arnold, in Siemon et al. 2021, p. 431).

Engaging students in Number Talks is closely aligned with the work of supporting students to develop a growth mindset in mathematics.

(Sun et al. 2018, p. 50)

Number Talks - Let's have a go



17 add 18

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Questions



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