## CURRICULUM, PEDAGOGY AND BEYOND









#### Big Ideas and the Victorian Curriculum V 2.0: Building a Scope and Sequence

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#### **Acknowledgement of Country**

We acknowledge the Wurundjeri people of the Kulin Nation, as the traditional custodians of the lands on which we meet today.

We pay respect to Elders past and present, and to all First Nations people, recognising them as the original and ongoing custodians of this land, which was never ceded.

We honour First Nations peoples as the first teachers of mathematics who continue to teach us by connecting with, respecting and caring for people and country.











Education and Training





#### **Goals for the session**

\*Experience of using this with 3 schools this year to guide teaching and learning

- Explore what the Big Ideas in Number are and their significance
- Look at the VC:M 2.0 and how to ensure coverage
- 5 steps taken to develop, implement and review a Scope and Sequence
- The why?
- Hands on- building the Scope and Sequence

#### **Big Ideas in Number**



There are many different Big Ideas, Key Ideas or concepts that you can break the curriculum into.

Today's session will focus on building a Scope and Sequence with Di Siemon's Big Ideas in Number and how we can link the revised curriculum descriptors to these big ideas to give a developmental trajectory of learning.

#### What are the Big Ideas in Number?





#### **The VC:M 2.0**

#### Amount of content descriptors in each level

Foundation	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
12	15	19	24	25	22	24

40 weeks of teaching 40x5= 200 lessons



40 weeks of teaching 40x4= 160 lessons 40 weeks of teaching 40x3= 120 lessons

#### **Step 1: Professional Learning**

- Professional learning around the Big Ideas in Number lead by the Numeracy Leader or MAV consultants
- Some experience of teaching the Big Idea in the classroom
- An understanding of the trajectory of skills that come of each Big Idea
- These can be unpacked in PLCs or whole staff PL sessions



#### **Step 2- Anticipate**



As a leadership team, do the task first!

Anticipate what teams might put together.

E.G. A lot of measurement concepts are introduced in level 1.

At level 3 Space has a presence that perhaps needs its own minor unit of learning.

Do these fit with an Inquiry unit that we are also partaking in?

#### **Step 3: Invite everyone**

- All leaders, teaching staff, specialist staff and education support staff.
- Break into levels and sort it to an extent that you all agree on.
- Cross check, question and engage in dialogue across levels.





#### Step 4: Document it

- Record it into your planner to build a scope and sequence that fits your level.
- Look for cross curricula connections e.g. Procedure writing? Consider lining up the measurement components and equipartitioning skills.



#### **Step 5: Apply and review**

- It is essential that we put all the work into practice.
- It is just as pertinent that we reflect on the development and implementation: recording and adjusting as required.

Leader's role	Teacher's role
<ul> <li>To follow up with teams and facilitate a discussion around the time allocation and coverage of content</li> </ul>	<ul> <li>Be confident in the Mathematical Content they are teaching</li> <li>Be flexible with increasing or reducing the time frames of big ideas</li> </ul>

# Why develop our own Scope and Sequence? Mathemater sequence, sinally for the sequence, sinally for the sequence, sinally for the sequence, sinally for the sequence of the seq

C2M1SP02\_VC2M2SP02

C2M2M05

VC2M2N03\_VC2M2M03

- To move away from silo teaching
- See and enhance the connectedness of ideas
- Enhances meaning for students and teachers
- Appropriate coverage given
- To give teachers autonomy and confidence in making connections

Foundat	tion-10			Mathematics – Numb	er and Algebra	: Foundat	ion –	Level 6			AND ASSESSMENT A
Foun	ndation Level	Level 1		Level 2	Level 3			Level 4	L	evel 5	Level 6
Number and Alge	ebra										
Fetablieb undorsta	e value	Dovolon confidence with number	1 80000008	Invostigato number seguences initially these							
processes of count	iting by naming numbers in	to and from 100 by ones from a	ny starting	increasing and decreasing by twos, threes,	Investigate the conditions re	equired for a	Investiga	te and use the properties of odd an	Identify and describe	factors and multiples of	Identify and describe properties of pr
equences, initially	y to and from 20, moving	point. Skip count by twos, fives	and tens	fives and ten from any starting point, then	and even numbers	ind identity odd	even nun	nbers	problems	composite, square and triangular nur	
om any starting p	point	starting from zero		moving to other sequences							Select and apply officient mental and
onnect number n	names, numerals and	Recognise, model, read, write a	ind order	Province model and and a day	Deservice model service		Deservit		Use settingting and		strategies and appropriate digital
uantities, includin	ng zero, initially up to 10	numbers to at least 100. Locate	these	numbers to at least 1000	numbers to at least 10 000	it and order	at least te	ens of thousands	reasonableness of a	ounding to check the	technologies to solve problems invol-
nd then beyond		numbers on a number line									four operations with whole numbers a make estimates for these computativ
				Group, partition and rearrange collections up	Apply place value to partitio	n roomanao and	Apply pla	ace value to partition, rearrange and	Solve problems invo	ving multiplication of	Investigate even day situations that
Jubitise small colle	ections of objects	Count collections to 100 by part	itioning	to 1000 in hundreds, tens and ones to	regroup numbers to at least	10 000 to assist	regroup r	numbers to at least tens of	large numbers by on	e- or two-digit numbers	integers. Locate and represent these
	,	numbers using place value		facilitate more efficient counting	calculations and solve prob	lems	nroblems	is to assist calculations and solve	using efficient menta appropriate digital te	l, written strategies and	numbers on a number line
	- d to d	Represent and solve simple add	dition and				problema	,	Ocho ambiene inve	innologies	
ompare, order an	nd make correspondences	subtraction problems using a ra	nge of	Explore the connection between addition and	Recognise and explain the	connection	Investiga	te number sequences involving	Solve problems invo digit number, includi	ving division by a one	
xplain reasoning	10, million y 10 20, and	strategies including counting on	, partitioning	subtraction	between addition and subtra	action	multiples	of 3, 4, 6, 7, 8, and 9	remainder	ig those that result in a	
		and rearranging pans			Recall addition facts for sine	ale-digit numbers					
Represent practica	al situations to model	Represent practical situations the	nat model	Solve simple addition and subtraction problems using a range of officient mental	and related subtraction fact	s to develop	Recall m	ultiplication facts up to 10 × 10 and	Use efficient mental	and written strategies	
ddition and subtra	action	sharing		and written strategies	increasingly efficient mental	strategies for	related di	t division facts allo apply appropriate digital technologies to solve problems			
				-	computation		Develop	efficient mental and written	-		
Represent practica	al situations to model			Recognise and represent multiplication as	Recall multiplication facts of	f two, three, five	strategies	s and use appropriate digital	Recognise, represer	t and order numbers to	
inaring				repeated addition, groups and arrays	and ten and related division	facts	technolog	gies for multiplication and for divisio	at least hundreds of	housands	
		-			Represent and solve proble	ms involving	where the	ere is no remainder			
				Recognise and represent division as grouping	multiplication using efficient	mental and					
				using these representations	written strategies and appro	priate digital					
Anney and finance	cial mathematice				technologies						
Ponropont simple	overview financial	Researches describe and order	Australian	Count and order small collections of	Represent money values in	multiple ways and	Solve pro	oblems involving purchases and the			Investigate and calculate percentage
situations involving	q money	coins according to their value	Ausualian	Australian coins and notes according to their	count the change required f	or simple	calculatio	on of change to the nearest five cent	s Create simple finance	al plans	discounts of 10%, 25% and 50% on a
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Pattern 2

VC2M1A02

VC2M1A01, VC2M2A01 2

VC2M2ST01

VC2M2ST02

## Assessment for common misunderstandings



#### Assessment for common misunderstandings

The key ideas addressed at each level are listed below.

- LEVEL 1 Trusting the Count, developing flexible mental objects for the numbers 0 to 10
- <u>LEVEL 2 Place-value, the importance of moving beyond counting by ones, the structu</u> of the base 10 numeration system
- <u>LEVEL 3 Multiplicative thinking, the key to understanding rational number and</u> <u>developing efficient mental and written computation strategies in later years</u>
- <u>LEVEL 4 Partitioning, the missing link in building common fraction and decimal</u> <u>knowledge and confidence</u>
- <u>LEVEL 5 Proportional reasoning, extending what is known about multiplication and</u> <u>division beyond rule-based procedures to solve problems involving fractions, decimals,</u> <u>percent, ratio, rate and proportion</u>
- LEVEL 6 Generalising, skills and strategies to support equivalence, recognition of number properties and patterns, and the use of algebraic text without which it is impossible to engage with broader curricula expectations at this level

### Sorting

Read the achievement standard for the level.

Sort the CDs into the big ideas

Blue = Number Pink = Algebra Green = Measurement Peach = Space Yellow = Statistics Questionable purple = Probability **Trusting the Count:** students believe that if they count the same collection again they will get the same amount; they can draw on mental objects for each of the numbers to ten based on visual imagery that allow them to 'see' these numbers in terms of their parts and as they relate to numbers of which they are a part (e.g., 8 is 6 and 2, double 4, 2 less than 10).

**Place Value** (a multiplicative structure): students see 10 ones as 1 ten and are able to work fluently with counts of tens and counts of ones independently; they understand and can use the relationship that 10 of these is 1 of those to extend the whole number system to hundreds and beyond.

**Additive Thinking:** inherently related to the construction and representation of number in particular part-part-whole ideas and place value. Knowing when to add or subtract and choosing a strategy appropriate to the task.

> **Multiplicative Thinking** (initial ideas): students move beyond an understanding of multiplication and division as repeated addition; they have access to efficient strategies for multiplication and division based on the number of groups rather than the number in each group (e.g., 3 of anything is double it and one more group).

Partitioning (another aspect of multiplicative thinking): students
extend their ideas about multiplication and division to make
connections to fractions, decimals and per cent; they understand
and use the 'for each' idea to solve simple proportional reasoning
nrohlems

**Proportional Reasoning** (a key defining aspect of multiplicative thinking): students recognise and work with relationships between numerical quantities; they represent these in multiple ways (e.g., graphs, tables, expressions) and solve problems involving fractions, decimals, per cent, rate, ratio and proportion.

**Generalising:** students recognise, describe and represent patterns, relations and functions in multiple ways; they work confidently with algebraic expressions and relationships to solve an extended range of problems.





### Event App

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#### Be in it to WIN!

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A02 - (Year 1 to Year 6) Supporting High Potential and Gifted Learners in Mathematics

#### Pedagogy

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(i) Description

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Dr Chrissy Monteleone

