





Challenging Tasks with Foundation Students

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Essendon North Primary School

Introductions



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Development of Big Ideas in Number

Big Idea # 0: Start up unit

Big Idea # 1: Place Value (Counting & Place Value in Foundation)

Big Idea # 2: Additive Thinking

Big Idea # 3: Multiplicative Thinking

Big Idea # 4: Fractional Thinking









Essendon North Primary School: Problem Solving Continuum

Resource: Problem Solving Slides - ENPS School Wide Visual Representations

Our ENPS Problem Solving Continuum has been developed based on the <u>Problem Solving Professional Reading</u> - from Helping Children Learn Mathematics -Robert Reys, Anna Rogers, Leicha Bragg, Audrey Cooke, Melissa Fanshawe, Mark Gronow - *Chapter 6 - this reading provides an overview of the seven* problem-solving strategies explicitly taught at ENPS. This continuum is also based on the work of Paul Staniscia.

Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Act it out	Act it out	Act it out				
Guess, Check and Improve	Guess, Check and Improve	Guess, Check and Improve				
Draw a Picture or a Diagram	Draw a Picture or a Diagram	Draw a Picture or a Diagram				
	Look for a Pattern	Look for a Pattern	Look for a Pattern			
	Construct a table	Construct a table	Construct a table	Construct a table	Construct a table	Construct a table
		Work backwards	Work backwards	Work backwards	Work backwards	Work backwards
				Solve a similar but simpler problem	Solve a similar but simpler problem	Solve a similar but simpler problem





Reference: Helping Children Learn Mathematics: Reys Et al and the work of Paul Staniscia

Development of Learning Trajectories

Start up Unit: Focus on growth mindset, learning pit, mathematical routines, number talks and revising the problem solving strategies.

Big Idea # 1: Place Value

- 1. Name & record
- 2. Count
- 3. Make & Represent
- 4. Rename
- 5. Compare & order
- 6. Calculate

Reference: <u>Teaching Place</u> <u>Value a Framework</u> Dr Ange Rogers

	The O Asp	ecis of Fluce	vulue	
Use w	the 6 aspe hole numbe	ects to guide er and decim	your teaching of al place value	
aspects form d definition o	n a structure to b f place value ar a	ase place value te id encourage every cross the school.	sching around. They prov one to use the same lang	id
c	Compare /Order	Count	Name/ Record	
	Rename	Place Value	Maice/ Represent	
		Calculate		

Big Idea # 2: Additive Thinking Year 2 - Year 6 Foundation - Year 1 Join/Combine and Separate 1. 1. Count 2. Part-Part-Whole & Compare 2. Combining/Separate 3. Partitioning 3. Part-Part-Whole 4. Properties of Additive 4. Partitioning Thinking Reference: Maths Sequences for the Early Years: **Reference:** Teaching Mathematics Sullivan Et Al (Foundation to Middle Years) Siemon Et al.



Development of Learning Trajectories

Big Idea # 3: Multiplicative Thinking

Foundation

- 1. Counting Patterns
- 2. Sharing

Year 1

- 1. Counting Patterns
- 2. Composite units
- 3. Representing Multiplication

Year 2

- 1. Counting Patterns
- 2. Composite units
- 3. Representing Multiplication
- 4. Representing Division
- 5. Flexible multiplication and division strategies

Year 3

- 1. Representing Multiplication
- 2. Representing Division
- 3. Flexible Multiplication and Division Strategies
- 4. Building Multiplicative Fact knowledge

Year 4 - 6

- 1. Building Multiplicative Number Facts Knowledge
- 2. Partitioning Arrays
- 3. Extending Multiplication representations
- 4. Combination Problems
- 5. Flexibly applying multiplication and division to solve problems







Essendon North Primary School: Multiplicative Thinking Continuum

Our ENPS Multiplicative Thinking Continuum has been developed based on the <u>Professional Reacting</u> : from Teaching Mathematics (Foundation to Middle Years) - By Siemon et al. (Chapter 15) - this reading provides on overview of multiplicative thinking. This continuum is also based on the work by Sulfixan et al. In Maths Sequences for the Early Years.						
Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Pre-Assessment The Zoo	Pre-Assessment Ba Ba Black Sheep Bubric	Pre-Assessment Ro.Ro.Ballack Sheep Rubric	Pre-Assessment Plant Pats Butzia	Pre-Assessment Spendy Snails Bubris	Pre-Assessment Speedy Scalls Rubric	Pre-Assessment Speedy Scals Bubris
Stage One: Counting Patterns Supportion One	Stage One: Counting Patterns Supportions 1-3	Stage One: Counting Patterns Supportions 4-5	Stage One: Representing Multiplication (arrays) Stope Two of the Year 2 Learning Trajectory	Stage One: Building Multiplicative Number Facts Knowledge Stage One of the Year Four Learning Trajectory	Stage One: Building Multiplicative Number Facts Knowledge Stage One of the Year Four Learning Trajectory	Stage One: Building Multiplicative Number Facta Knowledge Stage One of the Year Four Learning Trelectory
Stage Two: Sharing	Stage Two: Composite Units	Stage Two: Composite Units Stage One of the Year 2 Learning Trajectory	Stage Two: Representing Division Stage Three of the Year 2 Learning Trajectory	Stage Two: Partitioning Anays Stage Three of the Year Four Learning Trajectory	Stage Two: Partitioning Amays Stage Three of the Year Four Learning Trajectory	Stage Two: Pertitioning Anays Stage Three of the Year Four Learning Trajectory
	Stage Three: Representing Multiplication (amays) Stage Three 8: Linking multiplication to division	Stage Three: Representing Multiplication (armys) Steps Two of the Year 2 Learning Trajectory	Stage Three: Floxible Multiplication and Division Strategies Stage Four of the Year 2 Learning Tratestory	Stage Three: Extending Nultiplicative Representations Stage Four of the Year Four Learning Trajectory	Stage Three: Extending Multiplicative Representations Stage Four of the Year Four Learning Trajectory	Stage Three: Extending Multiplicative Representations Stage Four of the Year Four Learning Trajectory
		Stage Four: Representing Division Stage Three of the Year 2 Learning Trajectory	Stage Four: Building Multiplicative Number Facts Knowledge Stage One of the Year Four Learning Trajectory	Stage Four: Combination Problems Stope Two of the Year Four Learning Trajectory	Stage Feur: Combination Problems Stage Two of the Year Four Learning Trajectory	Stage Four: Combination Problems Stage Two of the Year Four Learning Trajectory
		Stage Five: Floxible multiplication and division strategies Stage Four of the Year 2 Learning Trajectory		Stage Five: Flexibly applying multiplication and division to solve problems Stage Five of the Year Four Learning Trajectory	Stage Five: Fieldly applying multiplication and division to solve problems Stage Five of the Year Four Learning Trajectory	Stage Five: Flexibly applying multiplication and division to solve problems Stage Five of the Year Four Learning Trajectory

Reference: Teaching Mathematics (Foundation to Middle Years) Siemon Et al. Chapter 15

Development of Learning Trajectories

Big Idea # 4: Fractional Thinking

Foundation

- 1. Partitioning objects equally
- 2. Making collections equal

Year 1 - 3

- 1. Fractions as equal parts of a whole
- 2. Fractions as a measure
- 3. Fractions as a quotient

Year 4 - 6

- 1. Fractions as equal parts of a whole
- 2. Fractions as a measure
- 3. Fractions as a quotient
- 4. Fractions as an operator
- 5. Fractions to decimals







Essendon North Primary School: Fractional Thinking Continuum

Our ENPS Fractional Thinking Continuum has been developed based on the Professional Reading- from Teaching Mathematics Foundations to Middle Years By Simeon et al. (Chapter 16) - this reading provides an overview of fractional thinking. This continuum is also based on the work by Sullivan et al. in Maths Sequences for the Early Years.

Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Pre-Assessment MOI	Pre-Assessment MOI or Adapt Year 2	Pre-Assessment	Pre-Assessment	Pre-Assessment	Pre-Assessment Pre-Assessment rubric	Pre-Assessment
Key idea: Creating halves	Key idea: Repeated halving	Key idea: Repeating fractional parts	Key idea: Reimagining the whole	Key idea: Equivalence	Key idea: Fractions as numbers	Key idea: Using fractions
tage One: Partitioning objects equally	Stage One: Fractions as equal parts of a whole	Stage One: Fractions as equal parts of a whole	Stage One: Fractions as equal parts of a whole	Stage One: Fractions as equal parts of a whole	Stage One: Fractions as equal parts of a whole	Stage One: Fractions as equal parts of a whole
Stage Two: Making collections equal (Making things equal Suggestion 1 - 3)	Stage Two: Fractions as a measure	Stage Two: Fractions as a measure	Stage Two: Fractions as a measure	Stage Two: Fractions as a measure	Stage Two: Fractions as a measure	Stage Two: Fractions as a measure
	Stage Three: Fractions as a quotient	Stage Three: Fractions as a quotient	Stage Three: Fractions as a quotient	Stage Three: Fractions as a quotient	Stage Three: Fractions as a quotient	Stage Three: Fractions as a quotient
				Stage Four: Fractions as an operator	Stage Four: Fractions as an operator	Stage Four: Fractions as an operator
				Stage Five: Fractions to decimals	Stage Five: Connecting fractions, decimals and percentages (link to probabilities)	Stage Five: Connecting fractions, decimals and percentages (link to probabilities)

References: Teaching Mathematics (Foundation to Middle Years) Siemon Et al. Chapter 16 Maths Sequences for the Early Years: Sullivan

ENPS Instructional Model

Anticipate Phase	Completed by teachers prior to teaching the task during collaborative planning. Teachers identify learning goals, curriculum objectives and prior knowledge needed. After completing the task themselves, teachers discuss students' anticipated responses. Planning of enabling and extending prompts, prompting questions and possible resources are discussed.
Warm-Up	A short five-minute activity that introduces students to either the mathematical concept of proficiency they are addressing in the remainder of the task, for example a Number Talk or quick card game. (5 minutes)
Launch Phase	During the launch phase, the teacher introduces the context and the mathematical proficiencies linked to this challenge and briefly draws connections with previous learning. The teacher poses the initial challenge in a way that is both engaging and meaningful to the learners. (10 minutes). Time is allocated for students to develop a tentative plan, contemplating the materials and resources available to use.
Explore Phase	Students actively and collaboratively explore the mathematical ideas presented. The teacher takes on a facilitator role and scaffolds the learning through open-ended questions and modelling. (30mins)
Summary Phase	This is a key moment - not just share time. The Summary phase draws the learning together that has taken place to provide a synthesis of the mathematical ideas. The teacher uses students' solutions, ideas and strategies to emphasise the important mathematical ideas in the challenge. As students share their approaches, other students are encouraged to question, compare and describe successful strategies respectfully, promoting a collaborative learning culture. (15mins)

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Primary School

Reference: An instructional model to support planning and teaching student centred structured inquiry lessons: Bobis et al



Classroom Coaching

Essendon North	6 CI	
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Subject:

Mathematics

(Additive

Thinking)

Numeracy Instructional Coaching Year 1 Professional Reading: Classroom Coaching

		Table of 9	Six Professiona	Observation M	1odels			
0	Videos of practice	Walkthroughs	Demonstration lesson	Peer observation	Lesson study	Instructional coaching observation	Date: Week 4, T2	School: Essendon North PS
Definition	Classroom practice is video recorded by the teacher and analysed with a colleague or coach.	Walkthroughs are informal short (e.g. 5 minutes) observations of several classrooms with a clear and specific focus.	Teachers invite others to observe them as they model an instructional approach or teaching strategy.	Peer observation involves teachers observing each other's practice and learning from one another.	Teaching teams co- design a lesson plan in response to an identified student learning need. They then observe each other to review, refine and improve the lesson.	The instructional coach observes the teaching practice (or vice versa) and supports the teacher through a series of coaching conversations.	Lesson snapshot: We have j and are now introducing th Stage One: Count Lesson 3; Count o Launch: • Teacher says a rar	us started Additive Thinking, we have explored count all e count on strategy. an/count all/count back n 1, 2, 3 (entire lesson plan <u>below</u>) dom number and students say out loud what one more is.
Purposes	Provides flexible and non-threatening observations and reflection on a teacher's practice. Stimulates professional dialogue among calleagues. Highlights best classroom practice. Provides an opportunity to track improvement in teaching practice over time. Supports and empowers newly qualified teachers through self-reflection.	Connects leaders to teachers and students. Supports leaders and teachers to note patterns and trends in instruction and student learning over time. Provides an opportunity to hear student and teacher valces. Provides an opportunity to see and hear the impact of teacher professional development.	Demonstrates a relevant teaching methodology and strategies for other teachers. Provides teachers with explicit models of high- quality practice. Conversations about effective teaching and learning. Provides an opportunity to adjust and build teaching repercive through self- reflection.	Supports collaborative planning practices and peer learning. Empowers teaching teams to work together to improve teaching and learning. Provides an opportunity to adjust and build teaching repartor supported by regular dialogue. Promotes the development of a support to the support development of a support the support development of a support the support development of a support the support development of a support to the support to the support development of a support to the support to the support development of a support to the support to the support to the support to the support development of a support to the support to the supp	Encourages sharing ideas and expertise for professional growth. Provides apportunities for collegid idecussions about challenges and successes. Posters a culture of collegid trust. Promotes and perspectives on learning and teaching. Supports shared practice and builds self-awareness about teaching practice.	 Supports teachers to trial and incorporate new pedagogical approaches. Supports teaching teams to embed agreed practices. Provides the opportunity to adjust and build practice in response to feedback. Stimulates self- reflection and builds resilience. 	Building on what how we been pro were provided and the set of th	has been learned in the previous few days. What strategy citing when adding two numbers? nodel the counting on strategy to the class using a relatively umber as today is just count on +1, 2 or 3. the smaller Exame place three counters, next to each other, in a row, column pounters, 18 of one colour and 18 of another colour. 2 players to flick the spinner and place a counter on a spot that is one mber spun. Eq. (1 a player spins a 1, they will add one to put their counter on a 2.
	Simple to implement – L	ess complex – Less formal		\rightarrow	Harder to implement – Mor	e complex – More formal	Enabling prompt	nvite those showing difficulty counting on to go back to using the counters and have them next to them to use if useded.
γıς	TORIA Education						Extending prompt	lave a go at making your own game board using larger numb setween 10 and 100.
	Government							
							Monitor and select stude	nts for:
Dep	artment of Educ	cation: Peer Obs	ervations				Students who are relying o strategy. Formative Tracker	on count all. Students should be practising the count on

Learning intention: To understand that counting on is a more efficient strategy to find the total of a collection.

Coach:

Renee

(+ Mel)

Success Criteria:

Coachee:

Nicola & Emma

(Year 1)

I can count on to find the total of two or more groups of collections.

Our Foundation Context

- 4 Foundation classes
- 80 students
- 2 team teaching spaces
- Each space has 40 students
- Challenging Tasks Semester 2, approximately
 - 3-4 hours a week
- 1-2 hours Maths games/skills
- Play-based Investigations







Challenging Task: Fabulous Crab!

Fabulous Crab decorated his shell with 10 jewels.Some are red and some are yellow.



What could his shell look like?







Planning for Challenging Tasks

- What do our Challenging Tasks look like?
- Collaboration & reflection is key!
- Team planning everyone is responsible
 - for planning maths
- Rountines
- Assessment
- ENPS Mathematics Planner
- Big Idea: Additive Thinking
- Mathematical Focus
- Proficiencies
- Anticipate Enable / Extend
- Supplementary Tasks
- Summary





Essendon North Primary School Mathematics Planner



Big Idea: Additive Thinking

Year Level: Foundation

Curriculum descriptors (and relevant proficiencies)				
 Level D (BELOW) Model practical situations involving 'adding to' or 'taking away' with collections of up to five objects (VCMNA056) 	 Foundation (At) Represent practical situations to model addition and subtraction (VCMNA073) 	 Year 1 (ABOVE) Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts (VCMNA089) 		



Year Level Proficiencies

The proficiencies of Understanding, Fluency, Problem Solving and Reasoning are fundamental to learning mathematics and working mathematically and are applied across all three strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability.

Understanding refers to students building a robust knowledge of adaptable and transferable mathematical concepts and structures. Students make connections between related concepts and progressively apply the familiar to develop new ideas.

Fluency describes students developing skills in choosing appropriate procedures, carrying out procedures flexibly, accurately, efficiently and appropriately, and recalling factual knowledge and concepts readily.

Problem-solving is the ability of students to make choices, interpret, formulate, model and investigate problem situations, select and use technological functions and communicate solutions effectively.

Reasoning refers to students developing an increasingly sophisticated capacity for logical, statistical and probabilistic thinking and actions, such as conjecturing, hypothesising, analysing, proving, evaluating, explaining, inferring, justifying, refuting, abstracting and generalising.

Four Proficiencies Research: FUSE

	Stage Two - Combining/Separation					
Getting Started / Going Deeper / Reflect and Consolidate		Learning Experience 2,3,4: Missing Cupcakes Pedagogical Approach: Challenging task	 Mathematical Focus and Vocabulary: Additive thinking Part-part-whole Separating an amount from the whole The inverse relationship between addition and subtraction (commutative property) Ten facts 			
Learning Intentions: To introduce separating an amount from the whole (subtraction). Represent practical situations to model addition and subtraction (VCMNA073)		 Success Criteria: I can explore how to separate an amount from a whole. I can record my thinking and explain my problem solving strategy. 	 Misconceptions: Accurate counting - One to one correspondence (enable) Not beginning with the whole number, confusing the task with combining/addition There is only one correct answer, and once I have found it I am finished (extend) 			
Warm Up Clap Counting The teacher claps while saying the first few numbers in the sequence, then stops saying the numbers aloud and continues clapping. The stude count in their heads and say the finishing number together. This can be done forwards from 0 or back towards 0. Larger numbers may be used extend student thinking.			the numbers aloud and continues clapping. The students from 0 or back towards 0. Larger numbers may be used to			







Explore

Teacher Group:

Have the following items available to students where they are working on their challenging tasks:

- Concrete materials
- Tens frames
- Number lines

Drawing tools

Prompting questions to guide learning:

General

- Can you tell me what you are doing?
- What did you do to get started?
- What strategy/ies are you using?

Enabling Prompt:

- What if there were 5 cupcakes and some went missing, how many could be left?
- Task specific suggestion such as: Could using a tens frame help? Could getting 10 cupcakes help?

Extending Prompt:

Check the below questions/criteria have been satisfied. If yes, change the number of cupcakes to 20:

- Have you found ALL of the possible solutions? How do you know you've found all of the combinations? What did you notice?
- Have you recorded in the most efficient way? Can you show it in another way? Wow, you've found all of the solutions! Can you show them in another way? (Using counters... using drawings... using numbers... using symbols (letters) etc).

Monitor and select students for: Misconception: Not beginning with the whole number, confusing combining/addition.

Anticipated Responses:

- Drawing 10 cupcakes, crossing some out
- Concrete materials to model the challenge
- Write words/letters to represent the cupcakes
- Using symbols to represent combinations
- Using numbers to represent combinations
- Systematic approach to finding all combinations with numbers
- Not beginning with the whole number, confusing the task with combining/addition







Essendon North Primary School

(e) Explore

Anticipate

Bummarise / Reviet

Summary:	In the teacher groups, we would like to spotlight students who are starting with the whole (10) and separating an amount from the whole, spotlight different ways they are recording what they find. Select students for summary who are separating an amount from the whole using any Problem Solving Strategy.
	Possible problem solving strategies they may use to demonstrate counting back to look for: Using fingers Concrete materials Tens frame Number lines Drawing



(a)

Anticipate

िं। Summarise / Revi

(el Explore

Planning a Launch

- Challenging task selection get excited!
- Collaboration *student, class & cohort data, sequence of learning*
- Task variation: same same but different
- Authentic connection to...
- children's literature
- songs
- non-fiction texts
- real world events
- verbal stories/scenarios
- role play
- student interests









Ariarne Titmus defends freestyle title as Australia leads ...

Australia has kicked off its **Olympics** campaign with a bang after claiming three gold medals to lead the tally.

Facebook · Sky News Australia · 28 July 2024



Anticipate

You anticipated when you arrived!

- → What answers did you anticipate students will find?
- → How might students find these answers?

Task: Fabulous Crab (5 mins)

Fabulous Crab decorated his shell with 10 jewels. Some are red and some are yellow.

What could his shell look like?









Anticipate

Anticipated Responses:

How: Strategy

- Draw it
- Make it
- Make a list (or a table)
- Find a pattern

What:

- Find the number confusing and need the problem broken down into fewer steps (enable)
- Draw too many jewels or draw them in a disorganised way
- Can't find a solution that equals 10 (enable/suggest make it strategy)
- Find one solution and stop
- Make a list but out of order
- Find a pattern by systematically listing the possible solutions



Differentiation: Planning to Enable and Extend

ENABLING PROMPTS REDUCING COMPLEXITY NOT REDUCING THINKING	EXTENDING PROMPTS EXTENDING THINKING NOT MORE WORK
 Change the range of numbers Lower numbers, or 'friendlier' numbers Reduce the number of steps. Simplify the recording or communication of strategies or solutions. Simplify or explain the language of the problem. Use of materials or visual representations To model the problem To provide 'concreteness' by limiting the amount of abstraction or visualisation required To illustrate the concepts As a reminder of previous tasks or discussions (posters, maths dictionaries etc) Reduce the physical or mental demands of using materials or representations. Grouping with others Share ideas and strategies Point out errors or discuss thinking Share jobs Another perspective on the task 	 Form generalisations. What is something you can say about all these solutions? What is the rule that works for all of these? What tip would you give someone else doing this task? Change the range of numbers More difficult / complex numbers Require explanations of thinking and strategies. Make a poster explaining how to do this Give a presentation Write in reflection journal Class blog Use materials that require more abstraction, model less of the situation to encourage mental strategies or abstraction Devise another problem Think of a similar problem/game/activity that the class could do that would help them to learn more about this concept What might be a similar problem for younger children.
 Questions or reminders Previous tasks or experiences, 'remember when' Drawing attention to important aspects 'What do you notice about? How does this strategy help you? What else could you try?' 	Sarah Ferguson - Clairvaux Catholic School



Supplementary Tasks

What are Supplementary Task ideas we could use to support I'm Fabulous Crab?





Big Idea - Additive Thinking/ Combining



Supplementary Tasks



Skill

Fluency

Play-based

Multiple Exposure





Spotlighting

Spotlighting student thinking, ideas strategies, progressions, how students are getting started.

• Showcasing Problem Solving Solutions

(how)

• Showcasing Mathematical Solutions

(what)



Problem Solving Strategies











Assessment Practices



Teaching Group					
I'm Fabulous Crab! Fabulous Crab decorated his shell with 10 genets. Some are red and some are yellow. What could his shell look like?	Strategy	Notes			
AD - All solutions found using one strategy	MAKE A LIST	Great confidence and had a plan - great explanation of the combinations			
DM - 1-5 correct solutions	MAKE A -	Needed prompting to start,			
DV - 1 correct solution found with support 💌	DRAW IT 🔻				
AD - All solutions found using one strategy	MAKE A +	I know i don't have all of the solutions yet because I haven't switcheroo them'			
DM - 1-5 correct solutions	MAKE A LIST				
EX - All solutions found, shown using two different strategies	MAKE A PATTERN	Found all solutions and I asked her to show it in another way.			
•	•				
AD - All solutions found using one strategy	MAKE A LIST	Goal - Find a pattern			
DM - 1-5 correct solutions	MAKE A LIST	Wrote a number sentence '5 and 5 makes 10', interesting, writing the sentence before recording it,			

- EX Explains clearly, organised and demonstrates proficiency using more than one strategy.
- AD Finds all solutions independently, explains their strategy.
- DM Separates part from the whole, find multiple solutions and basic explanation of their strategy.
- DV Separates the part from the whole with support, finds one solution, cannot explain strategy.

EM - No response or incorrect.

Absent



Challenges - The Journey of Trial and Error...

- The best way to **organise** sessions over time
- Managing the Teaching Group
 - Like-ability vs mixed ability
 - Student agency when selecting a task
- Balancing student independence and guidance
 - knowing when to foster inquiry and when to explicitly

teach key concepts

- Building teacher capacity
- Finding multiple solutions (students)
- Supplementary task activities
- Whole class explicit teaching of the Problem Solving Strategies
- Task ideas
- Assessment



Hmm.. how many red and how many yellow jewels do you think he had?







Key Successes

- Confidence
 - students all 'have a go', are open to learn & love the challenge intrinsic motivation
 - Growth Mindset
- Autonomy/Responsibility
 - Students decide upon, gather, and organise their own resources
- Rich Discussion & Vocabulary
 - Learning explicit vocab, explaining understanding, problem solving and reasoning becomes the norm the know an answer isn't the end! Maths Talks
- Think Time
 - Encouraging and championing the productive struggle
- Session Organisation
- Teacher Roles TG and Roving
- Data Application of knowledge
- Fun!



Key Resources

Early Years Lesson Resource

Teacher Professional Reading

F - 6 Lesson Resources





LEARN MATHEMATICS

TH ALIETBALIAN EDITION







Key Digital Resources









Love Maths











Where to Next?

- Elaborating the Launch Explore Summarise model to include the Victorian Teaching and Learning Model
- Implementing Mathematics Curriculum 2.0
- Further educating and upskilling the community
- Making further connections between number and the 5 other strands of mathematics.
- Adapting planning and planners to include the proficiencies (Understanding, Fluency, Reasoning and Problem Solving)
- Embedding consistent formative assessment practices across the school







Padlet One take away from today?









Question Time

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