

	ACTION Increase the number of students meeting SEA and increase high band status in numeracy across R-7.	Resources	Where are you?		
	<p>CHALLENGE OF PRACTICE: If we will adopt a common approach to number through Big Ideas in Number to sequence children's learning (strengthen Trust the Count, Place Value, Multiplicative Thinking and Partitioning), we will increase the number of students reaching SEA and above in numeracy.</p>	<p>Numeracy Guidebook: Stretch Read article: Pg 11 <i>Teachers teach number sense sequentially with particular focus on multiplicative thinking and partitioning.</i></p>	<p>COOL WARM HOT</p>		
1	<p>Alignment with effective research based approaches Department for Education numeracy guidebooks: (stretch) to identify best practices in mathematics. Refer articles <i>Teachers teach big concepts developmentally using visual tools and techniques: p16</i> <i>Teachers implement a guided inquiry approach that supports students to think and act like mathematicians and solve numeracy problems: p17</i> and Attachment 1 Big Ideas in Number and Attachment 2 Numeracy Progressions</p>	<p>Numeracy Guidebook: Stretch Maths Proficiencies</p>			
2	<p>Time Allocation: What daily allocation is given to Mathematics instruction and practise? 300 min of mathematics weekly - Uninterrupted learning time across a session Additional application of skills and knowledge in other curriculum areas</p>				
3	<p>Know your learners: What formative and summative data do you currently have?</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <ul style="list-style-type: none"> • BIIN misconceptions tests OR • TK misconceptions tests • PAT R • NAPLAN • A-E information • Student involvement in the formative assessment processes </td> <td style="vertical-align: top; width: 50%;"> <ul style="list-style-type: none"> • Anecdotal e.g. conferencing, use of reasoning strategies • Anecdotal notes from discussing mathematical thinking demonstrating understanding • Summative and Formative assessments: e.g. mathematics tasks, including problem solving, reasoning, fluency and understanding. • Strengths and weaknesses: anecdotal • Moderation of student work with like year level achievement </td> </tr> </table> <p>Know the DECD benchmarks for mathematics, NAPLAN, PAT-M</p>	<ul style="list-style-type: none"> • BIIN misconceptions tests OR • TK misconceptions tests • PAT R • NAPLAN • A-E information • Student involvement in the formative assessment processes 	<ul style="list-style-type: none"> • Anecdotal e.g. conferencing, use of reasoning strategies • Anecdotal notes from discussing mathematical thinking demonstrating understanding • Summative and Formative assessments: e.g. mathematics tasks, including problem solving, reasoning, fluency and understanding. • Strengths and weaknesses: anecdotal • Moderation of student work with like year level achievement 	<p>DECD Standard of Educational Achievement report (SEA)</p> <p>PAT resource Centre</p> <p>BIIN tests and support material</p> <p>Public Drive/ Teams</p>	
<ul style="list-style-type: none"> • BIIN misconceptions tests OR • TK misconceptions tests • PAT R • NAPLAN • A-E information • Student involvement in the formative assessment processes 	<ul style="list-style-type: none"> • Anecdotal e.g. conferencing, use of reasoning strategies • Anecdotal notes from discussing mathematical thinking demonstrating understanding • Summative and Formative assessments: e.g. mathematics tasks, including problem solving, reasoning, fluency and understanding. • Strengths and weaknesses: anecdotal • Moderation of student work with like year level achievement 				
4	<p>Know the curriculum:</p> <ul style="list-style-type: none"> • Use the MVPS BIIN scope and sequence (I can statements quilt) which will be saved on P drive and in Teams • Australian Curriculum Achievement standards, Content Descriptions • Include task opportunities in all of the Proficiencies – Fluency, Understanding, Reasoning and Problem Solving • Numeracy progressions and Numeracy capabilities 	<p>Curriculum website Resources - various</p> <p>AC – SA Teachers and Leaders resource website</p>			
5	<p>Understand the sequential nature of learning Number and how to identify misconceptions Follow BIIN Testing / TK Misconception testing (agreement) WHAT TEST , What year level, when</p>	<p>Assessment plan</p> <p>BIIN / Tierney Kennedy</p>			
6	<p>Plans are documented:</p> <ul style="list-style-type: none"> • Year plan, term overview, 10 week term program, weekly lessons with an AC linked, BIIN Number focus • Differentiation: evidence of core learning for every student • LD framework 2 units/term incorporating a moderation process each term to be carried out in PLC time 	<p>LDAM framework Public Drive/Teams Joint planning, programming, delivery, assessment and moderation in PLC teams</p>			

7	<p>Use Effective numeracy practices. How are these evident in your lesson plans?</p> <p>Intentional and Responsive plans to include</p> <ul style="list-style-type: none"> • Intervention, with appropriate strategies for students below SEA, at SEA, just below HB, in HB • Differentiated opportunities – <ul style="list-style-type: none"> ○ appropriately levelled tasks ○ open entry and exit points • Scaffolded and explicit instruction • Sequential focus – BIIN focus in Number <ul style="list-style-type: none"> ○ Mathematical practice at appropriate BIIN level until mastery of numbers 	<ul style="list-style-type: none"> • Monitoring and tracking student achievement <ul style="list-style-type: none"> ○ Intentional use of Formative Assessment strategies ○ Adjusted action as a result of assessment ○ Feedback to students re moving the learning forward • Cross curriculum links – see below (11) • Engagement strategies <ul style="list-style-type: none"> ○ Thought provoking tasks ○ Interactive ○ Inclusive of relevant real life experiences • Coverage of ALL of the Maths Proficiencies 	<p>3 wave model</p> <p>BIIN misconception advice TK misconceptions advice Flashcards – subitising</p> <p>Too Smart program??</p> <p>Subitising and trusting the count resources</p> <p>Problem solving tasks – various sources</p>	
8	<p>Lesson structure with explicit instruction:</p> <p>When teaching explicit mathematics skills and strategies, the lesson structure follows the 4 part lesson plan.</p> <p>Tuning in, Launch, Explore, Report, Reflect and Review</p> <p>Where applicable, I Do, We Do, You Do method (EDI) can be incorporated, with the important addition of REFLECTION</p> <p>Things that should be included in each lesson:</p> <ul style="list-style-type: none"> • Clear and well communicated learning intentions and success criteria <ul style="list-style-type: none"> ○ placement to be negotiable depending on purpose • Modelling using problems, manipulatives, children’s work or I Charts etc • Individual goal setting and conferencing 	<ul style="list-style-type: none"> • Links to every day experiences • Investigations • Explicit teaching of concepts and content • Built in reflection and feedback 	<p>Refer Numeracy agreement and supporting document</p>	
9	<p>Fluency in Number</p> <p>Activities are done daily (10 minutes). - For example:</p> <ul style="list-style-type: none"> • Mental routines • Number talks • Subitising cards 	<p><i>ALL practice should be connected to strategies that reinforces CONCEPTUAL UNDERSTANDING and not just memory retrieval</i></p> <ul style="list-style-type: none"> • Innovative use of technology is encouraged – e.g. App - Plickers 	<p>whiteboards - markers technology apps - e.g. Plickers</p>	
10	<p>Monitoring and tracking:</p> <p>For children below SEA, conference their number skills regularly.</p> <ul style="list-style-type: none"> • Individual/group conferencing to develop individual maths goals for students in <ul style="list-style-type: none"> ○ Content knowledge and understanding ○ Skill development – eg problem solving, reasoning, understanding as well as fluency 			
11	<p>Cross curriculum learning to embed skills and practices, (choosing and using of mathematical concepts and strategies)</p> <ul style="list-style-type: none"> • All other curriculum links • Kitchen/garden • Connected curriculum inquiry 			
12	<p>Professional Learning: Broaden your understanding of mathematics/numeracy – content and practices</p> <p>Consider an area for personal development in maths understanding and or pedagogy. Negotiate and plan with line manager</p>	<p>Jo Boaler, Tierney Kennedy Van De Walle text</p>		

Additional information

Evidence informed practices from the Guidebooks

Determine your position in regards to implementing these evidence informed practices

	Build Foundations	Shift Gear	Stretch	Maintain Momentum	Inspire
<i>Beliefs and attitudes</i>	<p>Develop positive beliefs and attitudes towards mathematics and numeracy</p> <p>All teachers identify their beliefs about the nature of mathematics and its relevance and how this relates to the numeracy development of their students</p>	<p>Recognise and strengthen numeracy across all learning areas</p> <p>Teachers work collaboratively in and across learning teams to further numeracy development</p>	<p>Enact positive beliefs and attitudes towards mathematics</p> <p>Teachers enact positive beliefs and attitudes towards mathematics, its relevance and its importance for all learners.</p>	<p>Enact positive beliefs and attitudes towards mathematics</p> <p>Teachers enact positive beliefs and attitudes towards mathematics, its relevance and its importance for all learners</p>	
<i>Number sense</i>	<p>Teach number sense sequentially using the Big ideas in number</p> <p>Develop students' sense of number by following the sequence provided in the Big ideas in number with a focus on trusting the count, place value and multiplicative thinking</p>	<p>Build on current number sense</p> <p>Teachers design learning following the sequence of the Big ideas in number focusing particularly on multiplicative thinking.</p> <p>Teachers provide ongoing, timely formative feedback. Use the Big ideas in number tools and advice. Use the National Numeracy Learning Progression to develop clear learning intentions.</p>	<p>Teach number sense sequentially with particular focus on multiplicative thinking and partitioning</p> <p>Teachers use the advice provided in the Big ideas in number to sequence student learning, strengthen trust the count and place value, and focus on multiplicative thinking and partitioning.</p> <p>Teachers use the National Numeracy Learning Progression to identify next steps and build learning from students' current mathematical understanding.</p>	<p>Extend number sense and mathematical thinking through mathematics investigation</p> <p>Set challenging learning goals. Refer to the Big ideas in number to ensure sequenced development of number sense.</p> <p>Use a reference text to extend student understanding of concepts and design learning developmentally. Involve students in mathematical investigation. Aim for mastery learning.</p>	<p>Extend number sense through multifaceted numeracy problems</p> <p>Scaffold students to think at high levels about the interconnectivity of mathematics concepts.</p> <p>Encourage mathematical thinking to solve multifaceted problems.</p> <p>Use the National Numeracy Learning Progression to build learning from students' current mathematical understanding.</p> <p>Use an agreed whole-school reference text to extend student understanding of concepts and design learning developmentally. Aim for mastery learning.</p>
<i>Visualisation</i>	<p>Teach developmentally using visual tools and techniques</p> <p>Teachers model, promote and encourage visuals, manipulatives and motion to enhance students' understanding of number patterns and mathematical concepts.</p> <p>Introduce visible thinking routines. Aim for mastery learning.</p>	<p>Teach big concepts developmentally</p> <p>Set challenging learning goals using diagnostic tools and the National Numeracy Learning Progression.</p> <p>Use the selected whole-school reference text to design learning to suit the developmental needs of all students.</p> <p>Teachers use the Numeracy Learning Continuum to guide learning across the curriculum.</p> <p>Aim for mastery learning</p>	<p>Teach big concepts developmentally using visual tools and techniques</p> <p>Teachers use the selected whole-school reference text to identify visual tools and techniques to support students' developmental learning of concepts.</p>	<p>Include visualisation in the learning design</p> <p>Use visual prompts and manipulatives. Encourage visual responses. Include somatosensory activities.</p>	<p>Teach the big concepts visually</p> <p>Use visual prompts and manipulatives. Encourage visual responses. Include somatosensory activities.</p>

	Build Foundations	Shift Gear	Stretch	Maintain Momentum	Inspire
Understanding, Reasoning and problem solving	<p>Implement a structured approach that supports students to think and act mathematically and work together</p> <p>Teachers build students' problem-solving skills and use the language of mathematics.</p> <p>Teachers promote metacognitive talk. Build students' collaborative inquiry skills.</p>	<p>Implement a structured approach that supports students to work together</p> <p>Extend students' ability to problem solve.</p> <p>Ask purposeful questions to assess and advance students' reasoning and sense-making about important number ideas and relationships.</p> <p>Use manipulatives including number charts, pictures, graphs and calculators.</p> <p>Implement a structured approach that supports students to work together.</p> <p>Extend students' collaborative inquiry skills.</p>	<p>Implement a guided inquiry approach that supports students to think and act like mathematicians to solve numeracy problems</p> <p>Provide opportunities to build students' fluency.</p> <p>Ask purposeful questions to assess and advance students' reasoning and sense-making about important number ideas and relationships.</p> <p>Design learning to deepen understanding through a structured approach that supports students to work together.</p> <p>Aim for mastery learning.</p>	<p>Extend mathematical thinking</p> <p>Extend the use of mathematical language.</p> <p>Develop students' mathematical habits of mind.</p> <p>Hold learning conversations in mathematics.</p> <p>Extend collaborative inquiry skills</p>	<p>Enable students to generalise and use mathematical proof</p> <p>Encourage mathematical thinking.</p> <p>Extend the use of mathematical language.</p> <p>Develop students' mathematical habits of mind.</p> <p>Hold learning conversations in mathematics.</p> <p>Extend collaborative inquiry skills.</p>

PLC Team ACTION

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Priority focus for the rest of 2019 Recommendation by Numeracy Action Team (29/8/19)

Learning intentions and success criteria – I can statements for maths leading on to heightened focus on reflection time and feedback in Maths lessons.

Number proficiency with the BIIN

ACTION TEAM Incubation: CH 2 Van De Wahl - problem solving approach commitment to read the chapter and try something – discuss at next meeting.

"Live" PowerPoint emailed.

Includes free resources...

- The Mathematics Shed <http://www.mathematicshed.com/>
- NRICH <https://nrich.maths.org/>
- Maths 300 <https://maths300.com/>
- Maths Starter of the Day https://www.transum.org/Software/SW/Starter_of_the_day/
- Youcubed <https://www.youcubed.org/>
- Maths Is Fun <https://www.mathsisfun.com/>
- Victorian Maths Challenge <http://vmc.global2.vic.edu.au/>
- NZ Maths <https://nzmaths.co.nz/>
- Dan Meyer <https://whenmathhappens.com/3-act-math/>
- Would you rather (maths) <http://www.wouldyourathermath.com/>
- APSMO (Australian Problem Solving Olympiads) https://www.apsmo.edu.au/ma/ma_hv_cm.php
- Wolfram Mathworld <http://vmc.global2.vic.edu.au/>
- Which one doesn't belong? <http://wodb.ca/>
- Math for Love <https://mathforlove.com/>
- AMT (Australian Maths Trust) https://competitions.amt.edu.au/index.php?action=user_join&grp_id=29