



Spencer Park Primary School Numeracy Policy (2018)

PRINCIPLES OF LEARNING AND TEACHING

At Spencer Park Primary School, we believe that student learning is maximised when there is a positive learning environment and when teachers implement the explicit teaching model.

Please refer to our Explicit Teaching Policy for further information.

ASSESSMENT

Assessment of the mathematics learning area will take place as part of the teaching and learning process for:

- Students to monitor their progress and achievements in learning
- Teachers to inform future planning of teaching/learning requirements
- Schools and systems, to meet system accountability requirements
- Other schools about the achievements of students or individuals to ensure continuity

Assessment must be VALID, EDUCATIVE, EXPLICIT, FAIR and COMPREHENSIVE and will include both formative and summative assessment.

The following assessment tools will be used to ensure consistency across school:

SYSTEM

- On-Entry Testing
- NAPLAN (National Assessment Program). Analysis of results will be used to highlight areas of strengths and weaknesses across the whole school and year levels.

SCHOOL

- PAT Maths Plus online assessment Years 1-6
- Origo assessments (quarterly tests) and review results at network meetings (PDF copies)
- Record student attainment using the [Origo Recording Summary](#)
S:\All Staff\Curriculum\Maths\Origo\Recording Summary
- [First Steps in Mathematics Diagnostic tasks](#) to inform classroom planning and monitor student's progress.
S:\All Staff\Curriculum\Maths\Revealing What Students Think.pdf

ROLES AND RESPONSIBILITIES

TEACHERS

- All teachers will use the Origo maths materials in planning and teaching mathematics in K-6, in conjunction with the WA curriculum P – 6 Scope and Sequence documents, to plan, teach and assess student achievement within their classroom, including the Calculate Strategies referred to in Appendix 2.
- Provide adequate time to develop numeracy skills each class teacher should provide a daily mathematics lesson with duration of at least 60 minutes and be in line the Department of Education policy of 50% tuition to be taken up with literacy and numeracy and according to the Numeracy Block detailed in Appendix 3.
- Provide an adjusted or differentiated program and appropriate support for all students including SAER.
- Use available resources where applicable and school based programs such as ITAS, TAGS etc.
- Explicitly teach strategies for problem solving.
- Ensure students develop automatic recall of key basic facts as per Appendix 1.
- Implement the COSIC problem solving strategies as per Appendix 4.

SCHOOL

- Provide ongoing support for Professional Development opportunities.
- Support individual classroom teachers.
- Provide adequate budgets to purchase materials and to finance PD.
- Allocate additional time to teachers in order that they can become more familiar with new initiatives & programs – staff meeting time, SDD, collaborative planning.
- Provide teachers with an opportunity to build scope and sequence of key tools/strategies required for Origo for each year level.

PARENTS

Parents are able to support the Mathematics Teaching and Learning programs by:

- Being actively involved in their children's mathematical learning both at school and at home.
- Understanding and supporting the school's mathematics and homework policies.
- Receiving Target documents provided for each year level.

RESOURCES

- [Origo Maths](#) (including key content and vocabulary)
S:\All Staff\Curriculum\Maths\Origo
- [First Steps in Maths Materials](#)
S:\All Staff\Curriculum\Maths\Numeracy Learning Sequences- First Steps
- WA Curriculum
- [YuMi maths](#)
S:\All Staff\Curriculum\Maths\YuMi
- [SPPS year level warm up](#)
S:\All Staff\Curriculum\Maths\MATHS YEAR LEVEL WARM UP 2018.docx
- [Problem solving process](#)
- [Teaching problem solving](#)
S:\All Staff\Curriculum\Maths\Maths Problem Solving.docx
- [Calculate strategies posters](#)
S:\All Staff\Curriculum\Maths\Number and algebra\Calculate\Strategies Posters\Upper primary strategy posters.pptx
- [Calculate posters junior](#)
S:\All Staff\Curriculum\Maths\Number and algebra\Calculate\Strategies Posters\1-3 strategy posters.pub
- [Math's room resources scope and sequence](#)
S:\All Staff\Curriculum\Maths\Maths Room Resources
- [Literacy and Numeracy Target Documents](#)
S:\All Staff\Curriculum\Targets

Semper Tenta - Always Strive

AUSTRALIAN CURRICULUM MENTAL MATHS STRATEGIES

Key

E Expose

TE Explicitly Teach

M Maintain

	K	P	1	2	3	4	5/6
PRINCIPLES OF COUNTING							
Each object to be counted must be touched (or included) once as the numbers are counted	TE	M	M				
The number must be said once and always in conventional order	TE	TE	M				
The objects can be touched in any order and the starting point does not affect the order	TE	TE					
The arrangement of objects does not affect how many there are	E	TE					
The last number tells us how many are in the whole collection	E	TE					
COUNTING ON AND BACK/SKIP COUNTING							
Putting largest number first (single digit)	E	E	TE	TE	M		
Putting largest number first (double digits)				E	TE	M	
By 2's, 5's, 10's to 100 forwards and backwards		E	TE	M			
By 2's, 5's, 10's to 1 000 forwards and backwards			E	TE	M		
By 2's, 5's, 10's to 10 000 forwards and backward			E	E	TE	TE	M
2's, 5's and 10's to 100 000 forwards and backwards						E	TE
PARTITIONING/ BASIC FACTS							
Subitise to 6 – standard	TE	TE	M				
Subitise beyond 6	E	TE	M				
Count and recognise numbers to 10	TE	M					
Count and recognise numbers to 20	E	TE	M				
To 100 (129)		E	TE	M			
To 1 000			E	TE	M		
To 10 000				E	TE	TE	M
100 000 and beyond					E	E	TE
COMPENSATING/FRONT LOADING							
To 10 eg. $5+5=7+3$			E	TE	TE	M	
2 digit numbers $24+37=20+30=50$ then $50+4+7$				E	TE	TE	TE
MULTIPLICATION RECALL (DIVISION)							
2, 3, 5, 10				E	TE	M	M
3, 4, 6, 7, 8, 9				E	E	TE	M
Place value partitioning - multiplication					E	E	TE
FACTORS							
Doubling and halving to 20	E	TE	M				
Double and halving to 100		E	TE	M			
Doubling and halving to 1000			E	TE	M		
Doubling and halving to 10 000				E	TE	TE	M
Factors and multiples					E	TE	TE

	K	P	1	2	3	4	5/6
SPECIAL NUMBERS							
Odd/even	E	E	E	E	E	TE	M
Prime					TE	M	M
Composite						TE	TE
Square							TE
Triangular							TE
Integers							TE
ADDITION & SUBTRACTION							
Partitioning	E	TE					
Build ten			TE	TE	M		
Bridge ten				TE	M		
Near doubles				TE	M		
Part part whole				TE	TE	M	
MULTIPLICATION & DIVISION							
Arrays					TE		
PROPERTIES OF NUMBER							
Commutative property of addition		E	TE	TE	M		
Addition property of zero		E	TE	M			
Commutative property of multiplication				E	TE	TE	M
Multiplication property of zero				E	TE	M	
Multiplication property of one				E	TE	M	
Distributive property of multiplication					E	TE	TE



CALCULATE STRATEGIES POSTERS

S:\All Staff\Curriculum\Maths\Number and algebra\Calculate\Strategies Posters

YEAR 1-3 CALCULATE PROMPT CARDS

S:\All Staff\Curriculum\Maths\Number and algebra\Calculate\Strategies Posters\ 1-3 calculate prompt cards.pptx

For example



Counting On



Counting Back



Skip Counting by 10



Splitting Numbers

UPPER PRIMARY STRATEGY POSTERS


S:\All Staff\Curriculum\Maths\Number and algebra\Calculate\Strategies Posters

For example

Break into hundreds tens and ones


$46 + 57 =$ $40 + 50 = 90$ $7 + 6 = 13$ $90 + 13 = 103$	$575 - 123 =$ $500 - 100 = 400$ $70 - 20 = 50$ $5 - 3 = 2$ 452	$6167 + 2232$ $6000 + 2000 = 8000$ $100 + 200 = 300$ $60 + 30 = 90$ $7 + 2 = 9$ 8399
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$124\ 361 + 221\ 327 =$
 $300\ 000 + 40\ 000 + 5000 + 600 + 80 + 8 = 345\ 688$



Compensate - Subtraction

$83 + 114 =$ Take 3 from 83 and 'give to' the 114 $80 + 117 = 197$	$656 - 199 =$ Add 1 to 199 and take 200 from 656 $656 - 200 = 456$ $+ 1 = 457$	$1370 - 432$ Take 30 from 432 and 'give to' the 1370 $1400 - 402 = 998$ -30 -30 $= 938$
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 Move numbers from one side of the equation to another...but don't forget to put them back.

NUMERACY BLOCK FRAMEWORK

P-Y6
15 minutes

WARM UP

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- 50% focus on recite, recall and apply of key maths facts
- Inclusion of skills taught
- A typical numeracy warm up may include number facts and/or times tables
 - Four operations
 - Place value
 - Rules, formulae
 - Coverage of maths strands
 - Maths vocabulary
 - Application of concepts/skills
 - NAPLAN concepts
 - Selection of previous work covered

Y1-2
20 minutes

MENTAL MATHS

Y3-6
30 minutes

PP - YEAR 2

- [Number facts & calculate strategies](#)
- S:\All Staff\Curriculum\Maths\Mental Maths

YEAR 3 - 6

- [Number facts & calculate strategies](#)
- S:\All Staff\Curriculum\Maths\Mental Maths

WHOLE CLASS EXPLICIT TEACHING

OPENING OF THE EXPLICIT LESSON

Introduce the Strategy/Concept

- State the goal of the lesson/part of lesson WALT (we are learning to) and WILF (what I am looking for)
- Review prerequisite skills and knowledge – checking for understanding
- Introduce the concept/skill to be explicitly taught and explain why students need to master the concept/ skill.

Students demonstrate understanding

P-Y2
25 minutes

Y3-6
30 minutes

I DO

Modelling (Think Aloud)

- WILF/steps the children are supposed to be doing
- Present new material in small steps
- Model procedures – “thinking out loud”
- Provide examples and non- examples
- Use clear language and avoid digressions
- 3 C’s = Clear, Consistent, Concise

Students demonstrate understanding

WE DO

Collaborative/Guided Practice

- Guide students as they practice – require high frequency of responses
- Ensure high rates of success
- Provide timely, explicit feedback, clues and prompts
- Have students continue to practice until fluent
- Teacher circulates the room and monitors/evaluates student practice by observing, asking questions and engaging students in focused talk
- If students are not mastering the skill return to “I do” steps and reteach

Students demonstrate understanding with high rates of accuracy

YOU DO

Independent Practice

- Individual work, differentiation for student levels
- Teacher circulates room and monitors individual student practice
- Engage students in focused questioning and feedback
- Students continue to practice until skills are automatic
- Check and correct students’ independent work to validate students’ level of mastery

Students demonstrate understanding with high rates of accuracy

PLOUGH BACK

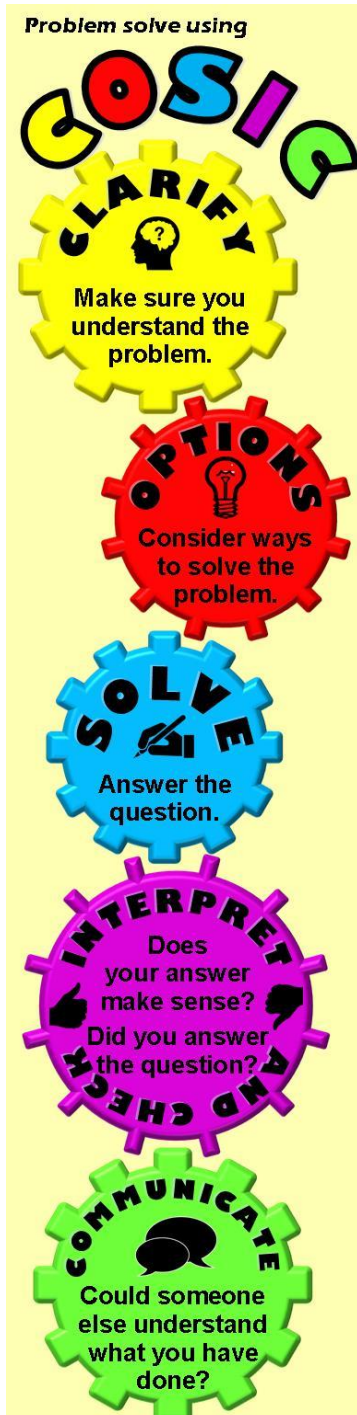
Closing of Explicit Lesson

- Check WALT and WILF
- Reflect on what has been learned, address any misconceptions
- Praise progress

P-Y6
5 minutes

PROBLEM SOLVING PROCESS

Available to whole school as wall chart or desk strip



A3 and desk strip versions available at
S:\AdminShared\E5422S01-Spencer Park PS\All Staff\Curriculum\Maths\Problem Solving\Posters and Deskstrips

Picture sources:

<https://thenounproject.com/term/thinking/13585/>

https://commons.wikimedia.org/wiki/File:Inkandeska_lampo.svg

<https://thenounproject.com/search/?q=writing&i=29383>

<https://www.iconspng.com/image/52468/thumbs-up-hand-silhouette>

https://simple.wikipedia.org/wiki/File:Simple_Comments.svg