

# Catalyst

You are the **Catalyst** that  
changes lives.

Curriculum

## K-6 Mathematics



Welcome to the first High Quality Curriculum Resource Pack, a suite of teacher and student resources and activities that will help you and your teachers deliver engaging and impactful mathematics lessons through K-6.

These resources have been identified as high-quality by a working group of CECG teachers and leaders across our Archdiocese.

We will work with you to identify student and teacher learning needs and integrate the most relevant high-quality curriculum resources into teaching and learning programs.



# Key resource for all K-6 teachers

## Primary and Middle Years Mathematics: Teaching Developmentally

(Van de Walle et al)

A must-have resource for instructional leaders and for all teachers with the support of aligned professional learning opportunities. This comprehensive, curriculum-aligned teacher resource builds understanding of how to teach Mathematics effectively and support diverse learners. It unpacks big ideas and worked examples and provides a range of classroom activities. It sets out the sequence of expected learning for students and supports teacher understanding of how to build students' understanding of key concepts across the curriculum throughout their primary and middle years schooling.



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# High-quality curriculum resources cont.

Type	Name	Description	Topics	Year levels
	<b>A Guide to Effective Instruction in Mathematics K-6</b> (Ontario Ministry of Education)	This comprehensive teacher reference from the Ontario Ministry of Education unpacks big ideas in Mathematics, provides worked examples and supports teachers with effective questioning for deeper understanding. The resource provides advice to support the learning of diverse learners and is underpinned by rigorous academic research. It sets out a range of activities and lesson ideas to support the planning of teaching and learning programs. Use in conjunction with curriculum planning resources to map to the Australian context.	✓ Comprehensive	K-6 (Two books for K-3 and 4-6)
	<b>BOSTES Mathematics Resource K-6</b> (BOSTES)	These curriculum-linked resources provide a range of activities, including quick and accessible fluency activities supported by templates and possible prompts. These are great to use as warm-up activities to begin each maths lesson. Use in conjunction with manipulatives and a teacher support resource (such as Van de Walle et al) that supports teacher understanding of how to overcome common student misconceptions.	✓ Comprehensive	K-6
	<b>Challenging Mathematical Tasks</b> (Sullivan)	This resource provides a range of curriculum-linked challenging mathematical tasks. It supports teachers to pose problems that students don't yet know how to solve, and to support them to find solutions. It includes enabling and extending prompts and is clear and easy for teachers to use. Use this resource in combination with a resource (such as Van de Walle et al) that helps support teacher understanding of how to overcome common student misconceptions..	✓ Comprehensive	K-6
	<b>Dr Paul Swan Maths - Base Ten Blocks, Pattern Blocks, Reasoning with Rods, Developing Mathematics with Unifix</b> (Swan)	These curriculum-aligned resources support the effective use of manipulatives to build students' conceptual understanding of Mathematics. They provide activities that unpack the big ideas and include instructional supports designed to address student misconceptions. Use resources in conjunction with Dr Paul Swan's comprehensive website, which provides curriculum guides, snapshots of the big ideas, teacher support resources and demonstration videos	<ul style="list-style-type: none"> <li>✓ Number and algebra</li> <li>✓ Measurement and geometry, fractions</li> <li>✓ Number and algebra, measurement and geometry</li> <li>✓ Number and algebra, measurement and geometry (Unifix)</li> </ul>	K-6 (ex. Unifix, which is K-3 and learning support)

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# High-quality curriculum resources cont.

Type	Name	Description	Topics	Year levels
	<b>Engaging Maths: 25 Favourite Lessons (Roche &amp; Clarke)</b>	This resource sets out explicit steps to teach 25 engaging lessons linked to key maths concepts and includes some extended investigations. Use in conjunction with curriculum planning documents.	<ul style="list-style-type: none"> <li>✓ Number and algebra</li> <li>✓ Measurement and geometry</li> <li>✓ Statistics and probability (1 activity)</li> </ul>	K-6
	<b>First Steps Mathematics (Western Australia Department of Education)</b>	These free, curriculum-aligned resources developed by the WA Department of Education unpack key mathematical concepts to support effective teaching across the curriculum. The resources provide learning progressions and suggested student activities and explore ways to overcome common student misconceptions.	<ul style="list-style-type: none"> <li>✓ Number</li> <li>✓ Measurement</li> <li>✓ Chance</li> <li>✓ Data and geometry</li> </ul>	K-6
	<b>How the Brain Learns Mathematics (Sousa)</b>	This teacher support research provides a detailed description of how the brain learns Mathematics. Its account of how children learn and develop mathematically supports teacher confidence and pedagogy.	<ul style="list-style-type: none"> <li>✓ Comprehensive</li> </ul>	K-6
	<b>Mathematical Mindset Teaching Resources (Stanford Graduate School of Education)</b>	These comprehensive resources bring Jo Boaler's research to life by unpacking the big ideas and providing a range of activities to support teachers to grow and foster mathematicians. This is an ideal resource for instructional leaders to use with their staff.	<ul style="list-style-type: none"> <li>✓ Comprehensive (each year level is its own book)</li> </ul>	K-6
	<b>Mathematics assessment for learning: Rich tasks and work samples (Downton &amp; Knight)</b>	This book provides a range of rich assessment tasks in Mathematics. It includes samples of real students' work, assessment rubrics, and explanation or scoring. This resource pre-dates the Australian Curriculum but tasks focus on a range of relevant curriculum areas. Use in conjunction with manipulatives and curriculum planning documents.	<ul style="list-style-type: none"> <li>✓ Number</li> <li>✓ Space</li> <li>✓ Measurement</li> <li>✓ Chance and data</li> </ul>	
	<b>Mathletics</b>	This curriculum aligned resource provides a range of engaging, arcade style activities. A useful supplementary resource, students can access this resource at home or at school to support their practice and mastery of key concepts.	<ul style="list-style-type: none"> <li>✓ Comprehensive</li> </ul>	K-12

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# High-quality curriculum resources cont.

Type	Name	Description	Topics	Year levels
	<b>Maths 300</b> (The Australian Association of Mathematics Teachers)	This online bank of curriculum-linked activities are highly engaging, mathematically dense, open-ended and challenging. Teachers require some time to navigate the website and understand how to use it and would benefit from the support of instructional leaders who can support task selection and model lessons.	✓ Comprehensive	K-12
	<b>Maths Online</b> (Murray)	This curriculum-aligned online resource is a useful supplementary resource. Students can access this resource at home or school to support their practice and mastery of key concepts.	✓ Comprehensive	K-12
	<b>NRICH</b> (University of Cambridge)	NRICH provides a range of research-based, student-centred activities linked to the National Curriculum in England. Use in conjunction with the <b>Primary Learning</b> website, which helps interpret the NRICH resources in the Australian context and provides explicit links to both the Australian Curriculum and NSW Syllabuses.	<ul style="list-style-type: none"> <li>✓ Number</li> <li>✓ Measurement</li> <li>✓ Chance</li> <li>✓ Data and geometry</li> </ul>	K-12
	<b>Open-ended Maths Activities: Using 'Good' Questions to Enhance Learning in Mathematics</b> (Sullivan & Lilburn)	This resource sets out a range of easy to use maths activities with multiple entry and exit points. Organised by curriculum content areas, it includes a range of questions for teachers to use in the classroom. Use in conjunction with curriculum planning documents and a text (such as Van de Walle et al) that provides information about pedagogical strategies to overcome common student misconceptions.	<ul style="list-style-type: none"> <li>✓ Number</li> <li>✓ Measurement</li> <li>✓ Chance</li> <li>✓ Data</li> <li>✓ Space</li> </ul>	K-6+
	<b>reSolve: Maths by Inquiry</b> (Australian Academy of Science)	This comprehensive, free, curriculum-linked suite of resources includes a range of detailed lessons complete with learning intentions and mathematical purpose, teacher background notes, questioning prompts and extension activities.	<ul style="list-style-type: none"> <li>✓ Fractions</li> <li>✓ Mental computation</li> <li>✓ Patterns</li> <li>✓ Reasoning</li> <li>✓ Statistics</li> <li>✓ Geometric reasoning</li> </ul>	K-6

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# High-quality curriculum resources cont.

Type	Name	Description	Topics	Year levels
	<b>Teaching and assessing Maths through open-ended activities</b> (Lilburn & Sawczak)	This comprehensive resource contains classroom activities, student work samples, rubrics and pedagogical advice to support the effective teaching of a range of topics. Not explicitly aligned to the Australian Curriculum but headings do give direction. Use in conjunction with curriculum planning documents.	✓ Comprehensive	K-10
	<b>Top Drawer Teachers: Resources for Teachers of Mathematics</b> (The Australian Association of Mathematics Teachers)	This resource provides a wealth of information about primary Mathematics that would enrich all classrooms. This resource is structured around big ideas, highlighting Australian curriculum content progression and practical pedagogical supports. It includes a range of classroom activities and pedagogical support unpacking the big ideas and exploring common student misconceptions. The resource is clickable and user friendly-use in conjunction with curriculum planning supports.	✓ Comprehensive	K-6

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# Manipulatives for every classroom

Manipulative	QTY	Year	Topic
Dice- 6 sided dot/pip	50	K-6	
Dice- 6 sided numeral	25	K-6	
Dice- 10 sided (0-9)	20	K-6	
Dice- 20 sided (1-20)	25	K-6	
Dice- 10 sided	15	1-6	<ul style="list-style-type: none"> <li>✓ 10s</li> <li>✓ 100s</li> </ul>
Dice- 10 sided	15	3-6	<ul style="list-style-type: none"> <li>✓ Place value (tenths, hundredths, thousandths)</li> </ul>
Pop Sticks (icy pole sticks) and rubber bands	1000	K-2	<ul style="list-style-type: none"> <li>✓ Place value</li> <li>✓ Bundling tool</li> </ul>
Pop Sticks (icy pole sticks) and rubber bands	500	3-6	<ul style="list-style-type: none"> <li>✓ Place value</li> <li>✓ Pattern</li> <li>✓ Algebra</li> </ul>
Dominoes	15	K-6	<ul style="list-style-type: none"> <li>✓ Number</li> <li>✓ Pattern</li> <li>✓ Algebra</li> </ul>
Calculators (hand-held)	25	K-6	<ul style="list-style-type: none"> <li>✓ Basic functions</li> </ul>



# Manipulatives for every classroom cont.

Manipulative	QTY	Year	Topic
Numeral 0-20 cards (without quantity)	15	K-2	
Playing cards	15	K-6	
Square counters (2 different colours)	500 per colour	K-6	
Round transparent counters (2 different colours)	500 per colour	K-6	
Round (flip) two coloured counters	500	K-6	
Various counters (e.g. buttons, lids, lima beans)	Large quantities to be collected by schools	K-6	
Unifix Blocks	min. 500	K-4	<ul style="list-style-type: none"> <li>✓ Counting</li> <li>✓ Algebra blocks</li> <li>✓ Partitioning</li> </ul>
Counting Blocks (2cm)	min. 500	K-6	<ul style="list-style-type: none"> <li>✓ Counting</li> <li>✓ Volume</li> <li>✓ Spatial skills</li> </ul>
Counting Blocks (1cm)	min. 1000	3-6	<ul style="list-style-type: none"> <li>✓ Counting</li> <li>✓ Volume</li> <li>✓ Spatial skills</li> </ul>

# Manipulatives for every classroom cont.

Manipulative	QTY	Year	Topic
Money (play) coins	500 (mixed)	K-6	<ul style="list-style-type: none"> <li>✓ Money</li> <li>✓ Place value</li> <li>✓ Additive skills</li> </ul>
Cuisenaire rods	2 large class sets	1-6	
Bead Strings-30 beads in a 5 structure (2 alternating)	15	K	
Bead Strings-30 beads in a 10 structure (2 alternating)	15	K	
Bead Strings-120 beads in a 10 structure (2 alternating)	15	1-6	
Bead Strings-60 beads in a 5 structure (2 alternating)	15	1-6	✓ Time
Pattern Blocks	2 large class sets	K-6	
Attribute Blocks	1 large class set	K-6	
Geoshapes (square)	150	3-6	
Ten frames- various styles (ensure counters form an array when placed)	50	K-1	

# Manipulatives for every classroom cont

Manipulative	QTY	Year	Topic
MAB materials (shorts, longs and flats)	2 class sets	2-6	
Metre Ruler	2	K-6	
Ruler (30cm)	25	K-6	
Numberlines (various-teacher produced)			
180° Protractors	25	5-6	
Classroom clock (analogue)	15	1-6	✓ Time

# Manipulatives for every school

Manipulative	QTY
Equal arm balances	15 per class set, min 2 sets per school
Stopwatches	15 per class set, min 2 sets per school
Trundle wheels	15 per class set, min 2 sets per school
Measuring tape	15 per class set, min 2 sets per school
3D object sets-including prisms and pyramids	Class set, min 2 sets per school
Geo-boards	25 per class set. (array grid-min 24 pin)
Money (play) (additional including notes)	15 per class set, min 2 sets per school
Protractors	15 per class set, min 2 sets per school
Time teaching clocks	1 teacher and 25 student clocks