The articulation between the mathematics of Years 1–10, and Mathematics B and C

Compiled by the Queensland Studies Authority

2003

About this advice

This advice is to help teachers understand the links between the mathematics of Years 1–10, and the Mathematics B and C syllabuses.

Queensland Studies Authority
Ground floor, 295 Ann Street, Brisbane. PO Box 307, Spring Hill Queensland 4004
Phone: (07) 3864 0299; Fax: (07) 3221 2553; Email: office@qsa.qld.edu.au; Website: www.qsa.qld.edu.au

Articulation: Years 1–10, and Mathematics B and C syllabuses

This document shows the articulation between the 'discretionary beyond Level 6 learning outcomes' from the Years 1–10 Mathematics syllabus and the Years 11 and 12 Mathematics B and C syllabuses. The identification of the links or articulation points could be useful for:

- heads of department in middle and later years of schooling in achieving consistency and continuity of planning
- students, parents and guidance officers when selecting Mathematics subjects in the senior years.

Ongoing feedback from teachers may be used to further enrich and refine this document in order to optimise its value for schools, students, parents and advisors. Send feedback to sao@qsa.qld.edu.au. In summary, this document shows how:

- the overall intent of the Years 1–10 Mathematics, and Mathematics B and C syllabuses, are linked
- the Years 1–10 Mathematics syllabus 'beyond Level 6 discretionary learning outcomes' provide prerequisite knowledge for the indicated Years 11 and 12 Mathematics syllabus topics (some examples of specific links are given for these topics).

Overall intent of syllabuses

There are deliberate and clear links between the key learning area outcomes of the Years 1–10 Mathematics syllabus, and the rationale, global aims, general objectives and the four broad contexts (of *Application*, *Technology*, *Initiative* and *Complexity*) of the Years 11-12 Mathematics B and C syllabuses. These are shown in the table that follows. *[The table runs over two pages]*

Key learning area outcomes of the Years 1–10 Mathematics syllabus	*Links to the Mathematics B and C syllabuses*
Understand the nature of mathematics as a dynamic human endeavour, its relationship with other human endeavours and its contribution to society.	The Rationale refers to the central nature of mathematics in major scientific and technological advances and its importance in a wide range of careers. The Global aims state that students should experience 'diverse applications of mathematics'. The Affective objectives refer to the appreciation of 'the contribution of mathematics to human culture and progress'. Across the continuum within the *Application* context, students learn about the usefulness of mathematics in situations that range from life-related to pure abstraction.
Interpret and apply underlying properties and principles that characterise and connect aspects of mathematics.	The general objectives of *Modelling & problem solving* and *Communication & justification* involve students in interpreting, applying, identifying and analysing as well as justifying decisions; these learning experiences are within and across the four contexts.
Identify and analyse information, think and reason inductively, deductively and intuitively to solve problems, make and justify decisions.	
Create mathematical models, reason inventively, analyse options, and consider the consequences and implications of decisions.	The general objective of *Modelling & problem solving* involves students in representing situations as models, identifying the assumptions and variables of models, forming models and interpreting results, exploring limitations and strengths of models The general objective *Communication & justification* requires students to 'develop logical arguments and support conclusions and propositions'.

<table>
<tr><td>Pose and solve mathematical problems using a variety of information-gathering, processing and management techniques and technologies.</td><td rowspan="3">The general objective of Modelling & problem solving requires that students ‘use a range of problem-solving strategies’ and ‘select the mathematical procedures to solve a problem’.
The context of ‘technology’ requires students to engage in a range of technological tools from pen and paper to measuring instruments to tables to graphing calculators and computers.
The context of ‘complexity’ requires students to engage in a range of tasks from simple, single-step tasks to complex tasks that depend on the nature of the concepts involved or the number of ideas of techniques to be sequenced.</td></tr>
<tr><td>Use the concise languages of mathematics, verbal and symbol, when communicating observations and ideas, engaging in substantive conversations about mathematics.</td></tr>
<tr><td>Collaborate and cooperate, challenge the reasoning and perspectives of others as appropriate, and contribute mathematical learning to investigations and the resolution of problems involving a range and balance of situations from life-related to purely mathematical.</td></tr>
<tr><td>Reflect on, evaluate and apply their mathematical learning to their personal and working lives, and make informed decisions about the future.</td><td>The ‘communication’ aspect of the general objective Communication & justification involves students in communicating ideas and information using mathematical terms and symbols in a variety of forms (oral, written, symbolic, pictorial and graphical) for different audiences.
The ‘justification’ aspect of this general objective involves students in activities such as developing substantiated arguments to support conclusions, and recognising when results are valid, improbable, implausible, or based on flawed assumptions. Insightful and creative solutions can be explored within the ‘initiative’ context.
The ‘problem solving’ and ‘investigation’ aspects of the general objective Modelling & problem solving involve students in clarifying and analysing problems, selecting, using and developing problem-solving strategies and these can be in life-related situations within the ‘application’ context.</td></tr>
</table>