

Mathematics



A Guide to the New Years 7–10 Syllabus

The new *Mathematics Years 7–10 Syllabus* will replace the *Mathematics Years 7–8 Syllabus* (1989) and the *Mathematics Years 9–10 Syllabus* (1996), and will be implemented in 2004 with Year 7 and Year 8 students.

The new syllabus is informed by contemporary research about how people learn and about how learning outcomes can be enhanced by teaching practice.

The syllabus promotes assessment for learning as an essential component of good teaching. It follows the broad directions established in the NSW Board of Studies *K–10 Curriculum Framework* and is part of a continuum of learning from Kindergarten to Year 12 that supports sustained, sequential, high quality learning.

What is similar?

The content of the *Mathematics Years 7–10 Syllabus* is similar to the content in the current syllabuses. Students will undertake a course of study that covers familiar areas such as:

- Working Mathematically
- Number
- Patterns and Algebra
- Data
- Measurement
- Space and Geometry.

Current programs can be modified to meet the requirements of the new syllabus and many existing units of work will form the bases of effective programs. The majority of existing resources will continue to be relevant.

The recent experience teachers have gained in implementing the *General Mathematics Stage 6 Syllabus* (1999) will assist in the implementation of the new *Mathematics Years 7–10 Syllabus*.

What is different?

The new syllabus builds on the current syllabuses in directions identified through research into the teaching of Mathematics in other systems and states, and through consultation at forums, meetings and during wide circulation of the draft syllabus.

- There is a significant reduction in the number of outcomes from the current *Mathematics Years 9–10 Syllabus* (1996) and the *Mathematics Years 7–8 Syllabus Outcomes* (1999).
- There is a description of the continuum of learning for students from Kindergarten to Year 10. This is specifically illustrated through:
 - a sequence of concept development from Early Stage 1 to Stage 5
 - outcomes and content for Stage 2 and Stage 3 to enable teachers to build on what students know and can do
 - stage statements for Stages 2 to 5.
- There are three pathways for Stage 5 (5.1, 5.2 and 5.3), each building on the concepts developed in the preceding pathway, allowing teachers to have flexibility in developing suitable programs for their students.
- There are recommended topics for students who are following the 5.2 pathway but who intend to study the Stage 6 Mathematics course.
- Optional topics are recommended as further preparation for the Stage 6 Mathematics Extension courses.
- A clear rationale, aim and objectives reflect the K–10 continuum.
- Additional content will assist teachers to address the needs and interests of a range of students.

The features of the contents pages

Outcomes and content are linked in tables to assist teachers with planning and programming

Key Ideas summarise the main concepts for the substrand. These also appear in the K–10 Scope and Continuum

Explicit content is expressed as *students learn about* (Knowledge and Skills) and *students learn to* (Working Mathematically) in a consistent format

Mass	Stage 3
<p>MS3.4 Selects and uses the appropriate unit and measuring device to find the mass of objects</p>	<p>Key Ideas Recognise the need for tonnes Convert between kilograms and tonnes Select and use the appropriate unit and device to measure mass Record mass using decimal notation to three decimal places</p>
<p style="text-align: center;">Knowledge and Skills</p> <p>Students learn about</p> <ul style="list-style-type: none"> ■ choosing appropriate units to measure mass ■ recognising the need for a unit larger than the kilogram ■ using the tonne to record large masses eg sand, soil, vehicles ■ using the abbreviation for tonne (t) ■ converting between kilograms and tonnes ■ selecting and using the appropriate unit and device to measure mass ■ recording mass using decimal notation to three decimal places eg 1.325 kg ■ relating the mass of one litre of water to one kilogram 	<p style="text-align: center;">Working Mathematically</p> <p>Students learn to</p> <ul style="list-style-type: none"> ■ solve problems involving different units of mass eg the total mass of three items weighing 50 g, 750 g and 2.5 kg (<i>Applying Strategies</i>) ■ associate gram measures with familiar objects eg a standard egg has a mass of about 60 g (<i>Communicating</i>) ■ find the approximate mass of a small object by establishing the mass of a number of that object eg ‘The stated weight of a box of chocolates is 250 g. If there are 20 chocolates in the box, what does each chocolate weigh?’ (<i>Applying Strategies</i>)
<p>Background Information Gross mass is the mass of the contents and the container. Nett mass is the measure of the contents only.</p>	
<p>Language ‘Mass’ and ‘weight’ have become interchangeable in everyday usage.</p>	

Working Mathematically, described as five interrelated processes, is embedded in the content as *learn to* statements

Advice on language and literacy is provided to assist students to engage with and understand the content

Background information is provided about the main concepts, along with links to other strands and key learning areas

- Cross-curriculum content statements provide an overview of the cross-curriculum content embedded in the essential content.
- Content relating to the use and understanding of information and communication technologies (ICT) is now incorporated in the syllabus content.
- Built into the syllabus is the concept that *assessment for learning* is integral to teaching and learning in a standards-referenced framework. *Assessment for learning* involves teachers planning how and when they will gather evidence of learning at the same time that they plan the work that students will do. It recognises the importance of assessment to student motivation and self-esteem, and promotes the active involvement of students in their own learning.

How can the syllabus be used to program?

The syllabus outcomes provide the focus for teaching and learning in Mathematics. The syllabus encourages a model of programming that begins with outcomes, and is precise about what is being taught and what is being learnt. Such a model uses the explicit linking of outcomes and content, and other features of the syllabus to:

- identify the outcomes to be addressed (see syllabus pages 15–27)
- identify the required evidence of learning
- assist teachers to plan explicit content to address the outcomes (see syllabus pages 46–166) and to allow students to demonstrate evidence of learning
- incorporate *assessment for learning* by using the assessment advice in the syllabus and in the support material that will be provided by the Board of Studies.

The advice on page 29 and the detailed continuum of learning on pages 30–39 assist teachers to program for students in Years 7–10 who have not demonstrated achievement of Stage 2 or Stage 3 outcomes by the beginning of Year 7, or who demonstrate achievement of 5.3 outcomes before the end of Year 10.

How does the syllabus cater for all students?

A key principle of the *K–10 Curriculum Framework*, which guides K–10 syllabus development, is that the curriculum must be inclusive of all students in New South Wales.

The rationale, aim, objectives, outcomes and content of the syllabus have been designed to accommodate teaching approaches that support the learning needs of all students.

Students with special education will participate fully in learning experiences and assessment activities. These students may require support in terms of modified tasks and varied learning approaches. There may also be occasions when different strategies are adopted to broaden and deepen the learning experiences of gifted and talented students.

Life Skills outcomes and content are being developed for Mathematics, using the rationale, aim and objectives of the syllabus. They will provide a program of study for the small percentage of students with special education needs, for whom the outcomes and content in sections 6 and 7 of the *Mathematics Years 7–10 Syllabus* are not appropriate. The completion of an individual plan for each student is a condition of access to the Life Skills pathway.

What support is the Board providing to assist with initial implementation of the syllabus?

Following the release of the syllabus, support materials will be released to assist teachers in understanding the syllabus and its associated assessment requirements.

The first School Certificate credentials based on the new syllabus will be awarded in 2006. Specific advice about requirements for the School Certificate and School Certificate test will be provided well in advance of 2006.

distributed with the syllabus	Phase 1 <ul style="list-style-type: none"> ■ this guide to the new Mathematics Years 7–10 Syllabus ■ draft Descriptions of Levels of Achievement
3 months after distribution of the syllabus	Phase 2 <ul style="list-style-type: none"> ■ advice on initial programming ■ sample introductory units of work ■ sample assessment tasks
6 months after distribution of the syllabus	Phase 3 (incorporates phases 1 and 2) <ul style="list-style-type: none"> ■ annotated samples of student work
12 months after implementation of the syllabus	Phase 4 <ul style="list-style-type: none"> ■ final Descriptions of Levels of Achievement

The Department of Education and Training, the Catholic Education Commission, other school systems, the Association of Independent Schools and professional associations will assist and support the ongoing implementation of the syllabus.
