

## Mathematics

### What are the key features of the draft K–10 Australian Curriculum for mathematics?

The draft K–10 Australian Curriculum for mathematics is organised around three content strands and four proficiency strands.

The content strands are *Number and algebra*, *Statistics and probability*, and *Measurement and geometry*. The content in those strands describe 'what' it is students will be taught.

The proficiency strands – *Understanding*, *Fluency*, *Problem solving* and *Reasoning* – describe the 'how' – the way content is explored or developed through the 'thinking' and 'doing' of mathematics. The proficiencies have been incorporated into the content descriptions in each of the three content strands. This approach ensures students' proficiency in mathematical skills is developed throughout the curriculum and becomes increasingly sophisticated over the years of schooling, and that students develop their capacity for logical thought and actions, such as analysing, proving, evaluating, explaining, inferring, justifying and generalising.

### How is the draft K–10 Australian Curriculum for mathematics similar to and different from state and territory curricula?

Current state and territory mathematics curriculum documents have been taken into account during the development of the K–10 mathematics curriculum. The draft curriculum broadly aligns with those documents in relation to *Number and algebra* and *Measurement and geometry*. Account was also taken of the National Assessment Program – Literacy and Numeracy (NAPLAN) for 2008 and 2009 in developing the content and achievement standards.

In terms of difference, the draft K–10 Australian Curriculum for mathematics contains a greater emphasis on statistics and probability in recognition of the need for students to be able to interpret data in the 21st century.

The embedded nature of the proficiency strands is in contrast to some state and territory documents where there is a separate process strand often called 'working mathematically'. There is a separate strand to ensure that the processes of mathematics are in context with, and linked to, appropriate mathematical concepts.

### What international references have been drawn upon in developing the draft K–10 Australian Curriculum for mathematics?

Singapore is one of the highest performing countries in mathematics of those participating in the *Trends in International Mathematics and Science Study* (TIMSS, 2007). England and the United States of America also performed significantly higher than Australia at Year 4 and slightly higher at Year 8.

The draft K–10 Australian Curriculum for mathematics is, in the main, consistent with the expectations described in the United States of America (National Council of Teachers of Mathematics Standards), the New Zealand mathematics curriculum, and those of Finland and the United Kingdom. The report of the *American Statistical Society, Guidelines in Assessment and Instruction in Statistical Education* (GAISE) has been used in the development of the statistics and probability strand.

In relation to the Singapore mathematics curriculum, the draft Australian Curriculum content is introduced more slowly in the early and primary years to ensure students have the opportunity to develop deep understanding before moving on. By Year 10, the conceptual difficulty is similar to that described in the Singapore documents.