

Mathematics (Foundation to Year 10)

The Foundation to Year 10 Australian Curriculum: Mathematics provides students with the skills to be confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations both at school and in their lives outside of school. The curriculum focuses on developing increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills.

How is the Australian Curriculum: Mathematics structured?

The Foundation to Year 10 Australian Curriculum: Mathematics is organised around three content strands and four proficiency strands.

The content strands are:

- *Number and algebra*
- *Measurement and geometry*
- *Statistics and probability*

The proficiency strands describe the actions in which students can engage when learning and using the content. The proficiencies are incorporated into the content descriptions of the three strands. While not all proficiency strands apply to every content description, they indicate the breadth of mathematical actions that teachers can emphasise.

The proficiencies are:

- *Understanding*
- *Fluency*
- *Problem solving*
- *Reasoning*.

Content descriptions are grouped into sub-strands to illustrate the sequence of development of concepts through and across the year levels. The sub-strands contained in each strand are listed below.

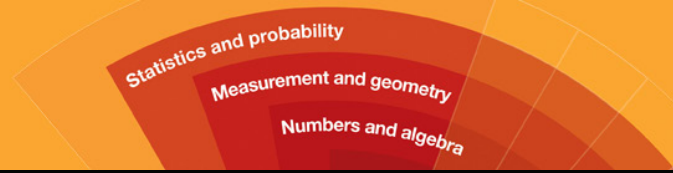
<i>Number and algebra</i>	<i>Measurement and geometry</i>	<i>Statistics and probability</i>
<i>Number and place value (F-8)</i>	<i>Using units of measurement (F-10)</i>	<i>Chance (1-10)</i>
<i>Fractions and decimals (1-6)</i>	<i>Shape (F-7)</i>	<i>Data representation and interpretation (F-10)</i>
<i>Real numbers (7-10)</i>	<i>Geometric reasoning (3-10)</i>	
<i>Money and financial mathematics (1-10)</i>	<i>Location and transformation (F-7)</i>	
<i>Patterns and algebra (F-10)</i>	<i>Pythagoras and trigonometry (9-10)</i>	
<i>Linear and non-linear relationships (7-10)</i>		

The **general capabilities** and **cross-curriculum priorities** are explicitly included in the content descriptions and elaborations across the strands, as appropriate to the learning area.

How does the Australian Curriculum: Mathematics relate to the Numeracy general capability?

In the Australian Curriculum general capabilities refer to a set of knowledge, skills and dispositions that will assist students to live and work successfully in the twenty-first century.

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Throughout their schooling, students develop and use these capabilities in their learning across all learning areas, in co-curricular programs such as sport, school camps and drama productions, and in their lives outside school.

Mathematics makes a special contribution to the development of numeracy in a manner that is more explicit than is the case in other learning areas. It is important that the mathematics curriculum provides the opportunity to apply mathematical understanding and skills in context, both in other learning areas and in real world contexts. A particularly important context for the application of *Number and algebra* is financial mathematics. In *Measurement and geometry*, there is an opportunity to apply understanding to design. The 21st century world is information driven, and through *Statistics and probability* students can interpret data and make informed decisions.

What international references have been drawn upon in developing the Australian Curriculum: Mathematics?

Development of the Foundation to Year 10 Australian Curriculum: Mathematics has drawn on high quality national and international curricula and research.

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 at Year 8 in TIMSS.

The Foundation to Year 10 Australian Curriculum: 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, Singapore 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 comparison to the Singapore mathematics curriculum, the Foundation to Year 10 Australian Curriculum: Mathematics 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.

The Foundation to Year 10 Australian Curriculum: Mathematics also has greater emphasis than the Singapore mathematics curriculum on building depth of mathematical understanding and includes the use of a variety of digital technologies to enhance the teaching and learning of mathematics. The Foundation to Year 10 Australian Curriculum: Mathematics facilitates a deep knowledge of statistics and probability and includes practical application of mathematics including financial literacy.

For more information please go to www.australiancurriculum.edu.au/Mathematics/Rationale.