

Senior secondary

Mathematics



Which subjects are available in the senior secondary Australian Curriculum: Mathematics?

The Australian Curriculum: Mathematics offers four senior secondary subjects:

Essential Mathematics focuses on using mathematics effectively, efficiently and critically to make informed decisions. It provides students with the mathematical knowledge, skills and understanding to solve problems in real contexts for a range of workplace, personal, further learning and community settings.

General Mathematics focuses on using the techniques of discrete mathematics to solve problems in contexts that include financial modelling, network analysis, route and project planning, decision making, and discrete growth and decay. It enables students to analyse and solve a wide range of geometrical problems in areas such as measurement, scaling, triangulation and navigation; and to develop systematic strategies to answer statistical questions that involve comparing groups, investigating associations and analysing time series.

Mathematical Methods focuses on the development of the use of calculus and statistical analysis. The study of calculus provides a basis for an understanding of the physical world involving rates of change, and includes the use of functions, their derivatives and integrals, in modelling physical processes. The study of statistics develops the ability to describe and analyse phenomena involving uncertainty and variation.

Specialist Mathematics provides opportunities, beyond those presented in *Mathematical Methods*, to develop rigorous mathematical arguments and proofs, and to use mathematical models more extensively. It contains topics in functions and calculus that build on and deepen the ideas presented in *Mathematical Methods* as well as demonstrate their application in many areas. *Specialist Mathematics* also extends students' knowledge and understanding of probability and statistics and introduces the topics of vectors, complex numbers, matrices and recursive methods.

How are the senior secondary Australian Curriculum: HASS subjects structured?

The senior secondary Australian Curriculum: Mathematics subjects specify content and achievement standards:

- The content describes the knowledge, understanding and skills that are to be taught and learned within each subject.
- The achievement standards describe the quality of learning (the depth of understanding, extent of knowledge and sophistication of skill) expected of students who have studied the content for the subject.

The curriculum is designed to be taught over a two-year period. Each senior secondary subject is organised into four units with the final two units designed to be cognitively more challenging than the first two.

Content has been specified for each unit, and achievement standards are described for each pair of units (Units 1 and 2; Units 3 and 4).

The curriculum also includes a rationale and a set of aims for the subject, a description of how the subject is organised, how general capabilities and cross-curriculum priorities are represented, and a glossary of key terms.



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How do the senior secondary Mathematics subjects align with the F-10 Australian Curriculum?

Each of the Australian Curriculum: Mathematics subjects provides students with a breadth of mathematical study that encompasses and builds on all three strands of the F-10 curriculum. The Number and Algebra strand focuses on using the techniques of discrete mathematics to solve problems in contexts. The Measurement and Geometry strand focuses on analysing and solving a wide range of geometrical problems. The Probability and Statistics strand focuses on acquiring systematic strategies based on the statistical investigation process for answering statistical questions. There is also an emphasis throughout the subjects on the use and application of information and communication technologies.

The senior secondary subjects continue to develop the general capabilities and cross-curriculum priorities introduced across Foundation to Year 10. Each subject includes a description of the opportunities for students to continue to develop their general capabilities and understanding of cross-curriculum priorities in ways that are relevant to the subject.

How do the senior secondary Mathematics subjects relate to each other?

The Australian Curriculum: Mathematics subjects are hierarchical by the nature of the content and their intended purpose.

Essential Mathematics focuses on using mathematics to make sense of the world. *General Mathematics* is designed for students who wish to undertake further studies where mathematical knowledge facilitates problem solving and decision making. *Mathematics Methods* is designed for students with an interest in Mathematics and whose future paths may involve mathematical studies at university.

Specialist Mathematics can be taken in conjunction with *Mathematical Methods* and is designed for students with a strong interest in Mathematics.

How do the senior secondary Mathematics subjects differ from those in states and territories?

ACARA continues to work with each of the state and territory curriculum, assessment and certification authorities to determine how senior secondary courses are aligned with their local courses in terms of content, achievement standards and the timeline for implementation.

For further information contact your local authority. Link to state and territory authorities here:

ACT	ACT Board of Senior Secondary Studies
NSW	NSW Education Standards Authority
NT	Northern Territory Board of Studies
Qld	Queensland Curriculum and Assessment Authority
SA	SACE Board of South Australia
Tas.	Office of Tasmanian Assessment, Standards and Certification
Vic.	Victorian Curriculum and Assessment Authority
WA	School Curriculum and Standards Authority

Which national and international research was drawn upon to develop the senior secondary Mathematics subjects?

In developing the senior secondary Australian Curriculum: Mathematics, ACARA reviewed state and territory Mathematics curricula and was further guided by key international and national research.

As part of ACARA's curriculum development process and its focus on quality curriculum, the senior secondary Australian Curriculum subjects were reviewed by international experts and curriculum authorities from around Australia.

