

# Mathematics C

## Subject guide 2008

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This subject guide relates to courses developed from the Mathematics C Senior Syllabus 2008.

### What is Mathematics C all about?

You would take Mathematics C in conjunction with Mathematics B. The subject contains topics in functions, calculus, probability and statistics that build on, and deepen, the ideas presented in Mathematics B and demonstrate their application in many areas. Vectors, complex numbers and matrices are introduced.

### What will you learn?

In Mathematics C, you will study mathematical concepts such as groups, real and complex number systems, matrices, vectors, calculus, mathematical structures, linear programming, conics, dynamics, and advanced periodic and exponential functions. While studying these you will develop:

- knowledge and skills in advanced computation, and algebraic methods and procedures
- mathematical modelling, and problem-solving strategies and skills
- the capacity to justify mathematical arguments and make decisions
- the capacity to communicate about mathematics in a variety of forms.

Your Mathematics C course will consist of core and option topics. The six core topics are:

- Introduction to groups
- Real and complex number systems
- Matrices and applications
- Vectors and applications
- Calculus
- Structures and patterns.

Two option topics will be selected by schools from:

- Linear programming
- Conics
- Dynamics
- Introduction to number theory
- Introductory modelling and probability
- Advanced periodic and exponential functions
- School option(s).

## How will you learn?

You will undertake life-related applications of mathematics in real and simulated situations, use mathematical technologies and model and problem solve mathematically. You will work individually, in small groups and as a class. You will be required to write, speak, listen or devise presentations in a variety of forms to communicate mathematically.

You would undertake Mathematics C if you had a strong interest in mathematics, and intended to study mathematics, statistics, the sciences and associated fields, economics or engineering at university.

## How will you be assessed?

Assessment in Mathematics C gives you opportunities to demonstrate Knowledge and procedures, Modelling and problem solving, and Communication and justification.

In Mathematics C, assessment instruments include:

- supervised tests — within this category, tests are conducted under supervised conditions and commonly include tasks requiring quantitative and/or qualitative responses
- extended modelling and problem-solving tasks — within this category, students provide a response to a specific task or issue that could be set in a context that highlights a real-life application of mathematics
- reports — within this category, assessment tasks are typically an extended response to a practical or investigative task such as: an experiment in which a dataset is collected, analysed and modelled; a mathematical investigation; a field activity; or a project.

In Year 12, you will be expected to complete a minimum of five assessment instruments, with at least two of these being an extended modelling and problem-solving task or a report or similar.

## Where can Mathematics C take you?

This subject contributes four credits towards the Queensland Certificate of Education (QCE). If you would like to learn more about this certificate, please visit the QCE page on the QSA website [www.qsa.qld.edu.au/589.html](http://www.qsa.qld.edu.au/589.html).

Mathematics C is recommended if you wish to pursue further study and training at tertiary level in areas such as:

- mathematics and statistics
- mathematics and science education
- natural and physical sciences, especially physics and chemistry
- medical and health sciences, including human biology, biomedical, nanoscience and forensics
- engineering sciences, including avionics, chemical, civil, communications, electrical, mechanical and mining
- information technology and computer science, including electronic and software
- mathematical applications in:
  - energy and resources — management and conservation
  - climatology

- design and built environment
- industry, manufacturing and trades
- business and tourism
- economics and commerce
- statistics and data analysis.

For further information about future tertiary pathways, consult the QTAC Guide to Tertiary Courses [www.qtac.edu.au](http://www.qtac.edu.au).

## How can parents/carers help?

Your parents/carers may help you by:

- discussing different views of current Mathematics C issues with you
- encouraging and helping you to find suitable websites, documentaries, journals and other resources
- encouraging you to take part in school-based activities, including field trips, and extracurricular activities
- offering their services as guest speakers if they are involved in this area of study or related industry
- encouraging safe and ethical behaviour
- contacting your school to establish communication with your teachers to help understand the work undertaken at senior level, and to become familiar with assessment requirements.

## More information

If you would like more information, please email [senior.syllabuses@qcaa.qld.edu.au](mailto:senior.syllabuses@qcaa.qld.edu.au). You can also visit the QCAA website [www.qcaa.qld.edu.au](http://www.qcaa.qld.edu.au) and search for 'Mathematics C'.