

SACE Maths 2018 Index



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Subject Code Information:

Subjects with an A or B in their name: these subjects are Semester long units that can be studied individually or together to make a full year subject. There is **no** assumption that A has been studied before students can undertake the B option. Some subjects highly recommend both are studied (see course descriptions).

Subjects with a 1 or a 2 in their name: these subjects are sequential. Before students can study the 2nd option they must undertake the 1st option. There **is** an assumption that students know the content of the 1st option before they undertake the 2nd to enable them to be successful.

Length: 1 Semester

Assumed Knowledge:

Year 10 Mathematics.

Description:

Essential Mathematics offers senior secondary students the opportunity to extend their mathematical skills in ways that apply to practical problem solving in everyday and workplace contexts. Students apply their mathematics to diverse settings, including everyday calculations, financial management, business applications, measurement and geometry, and statistics in social contexts.

In Essential Mathematics there is an emphasis on developing students' computational skills and expanding their ability to apply their mathematical skills in flexible and resourceful ways.

This subject is intended for students planning to pursue a career in a range of trades or vocations.

The following topics will be studied:

- Calculations, Time, and Ratio
- Earning and Spending
- Geometry

A scientific calculator is required.

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	40%
Folio	60%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 1 Essential Mathematics 2.

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Length: 1 Semester

Assumed Knowledge:
Essential Mathematics 1

Description:

Essential Mathematics 2 continues to build on the study of Mathematics developed in Stage 1 Essential Mathematics 1.

In Essential Mathematics there is an emphasis on developing students' computational skills and expanding their ability to apply their mathematical skills in flexible and resourceful ways.

This subject is intended for students planning to pursue a career in a range of trades or vocations.

The following topics will be studied:

- Data in Context
- Measurement
- Investing

A scientific calculator is required.

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	40%
Folio	60%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 2 Essential Mathematics (in 2017)

Stage 2 Essential Mathematics prepares students with the mathematical knowledge, skills, and understanding needed for entry to a range of practical trades and vocations. This includes industry areas and occupations such as automotive, building and construction, electrical, hairdressing, hospitality, nursing and community services, plumbing, and retail.

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Length: 1 Semester

Assumed Knowledge:

Year 10 Mathematics.

Description:

General Mathematics extends students' mathematical skills in ways that apply to practical problem solving. A problem-based approach is integral to the development of mathematical models and the associated key ideas in the topics. These topics cover a diverse range of applications of mathematics, including personal financial management, measurement and trigonometry, the statistical investigation process, modelling using linear and non-linear functions, and discrete modelling using networks and matrices.

The following topics will be studied:

- Investing and Borrowing
- Measurement
- Statistical Investigation

A scientific calculator is required.

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	40%
Folio	60%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 1 General Mathematics 2.

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Length: 1 Semester

Assumed Knowledge:

General Mathematics 1.

Description:

General Mathematics build on the study of Mathematics developed in Stage 1 General Mathematics 1.

The following topics will be studied:

- Applications of Trigonometry
- Linear and Exponential Functions and their Graphs
- Matrices and Networks

A scientific calculator is required.

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	40%
Folio	60%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 2 General Mathematics (in 2017)

Stage 2 General Mathematics prepares students for entry to tertiary courses requiring a non-specialised background in mathematics.

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Length: 1 Semester

Assumed Knowledge:

Year 10 Mathematics and Year 10 Advanced Mathematics.

Description:

Mathematics develops an increasingly complex and sophisticated understanding of calculus, statistics, mathematical arguments and proofs, and using mathematical models. By using functions, their derivatives and integrals, and by mathematically modelling physical processes, students develop a deep understanding of the physical world through a sound knowledge of relationships involving rates of change. Students use statistics to describe and analyse phenomena that involve uncertainty and variation.

The following topics will be studied:

- Functions and graphs
- Polynomials
- Trigonometry

A CASIO Graphics Calculator can be borrowed for this course

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	70%
Folio	30%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 1 Mathematics 2 and Stage 1 Mathematics 3.

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Length: 1 Semester

Assumed Knowledge:

Stage 1 Mathematics 1

Description:

Mathematics 2 continues and builds on the academic study of Mathematics developed in Stage 1 Mathematics 1. It must be studied in conjunction with Stage 1 Mathematics 3 to prepare students to undertake Specialist Mathematics.

The following topics will be studied:

- Counting and Statistics
- Growth and Decay
- Introduction to Differential Calculus

A CASIO Graphics Calculator can be borrowed for this course

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	70%
Folio	30%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 1 Mathematics provides the foundation for further study in mathematics in Stage 2 Mathematical Methods and Stage 2 Specialist Mathematics.

Stage 2 Mathematical Methods can lead to tertiary studies of economics, computer sciences, and the sciences. It prepares students for courses and careers that may involve the use of statistics, such as health or social sciences.

Stage 2 Specialist Mathematics can be a pathway to mathematical sciences, engineering, space science, and laser physics. Specialist Mathematics is designed to be studied in conjunction with Mathematical Methods.

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Length: 1 Semester

Assumed Knowledge:

Stage 1 Mathematics 1 and Stage 1 Mathematics 2 (studied concurrently).

Description:

Mathematics 3 continues and builds on the academic study of Mathematics developed in Stage 1 Mathematics 1. It must be studied in conjunction with Stage 1 Mathematics 2 to prepare students to undertake Specialist Mathematics and is highly recommended to prepare students to undertake Stage 2 Mathematical Methods.

A selection from the following topics will be studied:

- Arithmetic and Geometric Sequences and Series
- Geometry
- Vectors in the Plane
- Further Trigonometry
- Matrices
- Real and Complex Numbers.

A CASIO Graphics Calculator can be borrowed for this course

Assessment Details:

A student portfolio is kept for each student that will consist of the following components:

Skills and Applications Tasks	70%
Folio	30%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of each semester.

Future:

Stage 1 Mathematics provides the foundation for further study in mathematics in Stage 2 Mathematical Methods and Stage 2 Specialist Mathematics.

Stage 2 Mathematical Methods can lead to tertiary studies of economics, computer sciences, and the sciences. It prepares students for courses and careers that may involve the use of statistics, such as health or social sciences.

Stage 2 Specialist Mathematics can be a pathway to mathematical sciences, engineering, space science, and laser physics. Specialist Mathematics is designed to be studied in conjunction with Mathematical Methods.

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Length: 2 Semesters

Assumed Knowledge:

Stage 1 Essential Mathematics or Stage 1 General Mathematics successfully completed with a C grade or better.

Description:

In this subject students extend their mathematical skills in ways that apply to practical problem solving in everyday and workplace contexts. A problem-based approach is integral to the development of mathematical skills and associated key ideas in this subject.

Students study the following topics:

- Scales, Plans, and Models
- Measurement
- Business Applications
- Statistics
- Investment and Loans

They use tables, graphics calculators, and computers, and develop skills in interpreting instructions.

A CASIO Graphics Calculator can be borrowed for this course

Assessment Details:

A student portfolio is kept for each student which consists of a school-based component and an externally assessed component weighted as follows:

School Based Assessment:

Skills and Applications Tasks	30%
Folio	40%

External Assessment:

External Examination	30%
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The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of the year.

Future:

Stage 2 Essential Mathematics prepares students with the mathematical knowledge, skills, and understanding needed for entry to a range of practical trades and vocations. In the 'considerations for developing teaching and learning strategies' the term trade is used to suggest a context in a generic sense to cover a range of industry areas and occupations such as automotive, building and construction, electrical, hairdressing, hospitality, nursing and community services, plumbing, and retail.

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Length: 2 Semesters

Assumed Knowledge:

Stage 1 General Mathematics or Stage 1 Mathematics 1 & 2 successfully completed with a C grade or better.

Description:

Stage 2 General Mathematics offers students the opportunity to develop a strong understanding of the process of mathematical modelling and its application to problem solving in everyday workplace contexts.

A problem-based approach is integral to the development of both the models and the associated key ideas in the topics. These topics cover a range of mathematical applications including: linear functions, matrices, statistics, finance and optimisation.

Students study the following topics:

- Modelling with Linear Relationships
- Modelling with Matrices
- Statistical Models
- Financial Models
- Discrete Models

A CASIO Graphics Calculator can be borrowed for this course

Assessment Details:

A student portfolio is kept for each student which consists of a school-based component and an externally assessed component weighted as follows:

School Based Assessment:

Skills and Applications Tasks	40%
Mathematical Investigations	30%

External Assessment:

External Examination	30%
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The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of the year.

Future:

Stage 2 General Mathematics prepares students for entry to tertiary courses requiring a non-specialised background in mathematics.

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Length: 2 Semesters

Assumed Knowledge:

Stage 1 Mathematics 1 & 2 successfully completed with a C grade or better. (Stage 1 Mathematics 3 also highly recommended).

Description:

Mathematical Methods develops an increasingly complex and sophisticated understanding of calculus and statistics. By using functions, their derivatives and integrals, and by mathematically modelling physical processes, students develop a deep understanding of the physical world through a sound knowledge of relationships involving rates of change. Students use statistics to describe and analyse phenomena that involve uncertainty and variation.

Students study the following topics:

- Topic 1: Further Differentiation and Applications
- Topic 2: Discrete Random Variables
- Topic 3: Integral Calculus
- Topic 4: Logarithmic Functions
- Topic 5: Continuous Random Variables and the Normal Distribution
- Topic 6: Sampling and Confidence Intervals.

A CASIO Graphics Calculator can be borrowed for this course

Assessment Details:

A student portfolio is kept for each student which consists of a school-based component and an externally assessed component weighted as follows:

School Based Assessment:

Skills and Applications Tasks 50%

Mathematical Investigation 20%

External Assessment:

External Examination 30%

The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of the year.

Future:

Mathematical Methods provides the foundation for further study in mathematics, economics, computer sciences, and the sciences. It prepares students for courses and careers that may involve the use of statistics, such as health or social sciences. When studied together with Specialist Mathematics, this subject can be a pathway to engineering, physical science, and laser physics.

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Length: 2 Semesters

Assumed Knowledge:

Stage 1 Mathematics 1, 2 and 3.

Description:

Specialist Mathematics draws on and deepens students' mathematical knowledge, skills, and understanding and provides opportunities for students to develop their skills in using rigorous mathematical arguments and proofs, and using mathematical models. It includes the study of functions and calculus.

Students study the following topics:

- Topic 1: Mathematical Induction
- Topic 2: Complex Numbers
- Topic 3: Functions and Sketching Graphs
- Topic 4: Vectors in Three Dimensions
- Topic 5: Integration Techniques and Applications
- Topic 6: Rates of Change and Differential Equations.

A CASIO Graphics Calculator can be borrowed for this course

Specialist Mathematics can be studied only in conjunction with Mathematical Methods, unless Mathematical Methods has previously been studied.

Assessment Details:

A student portfolio is kept for each student which consists of a school-based component and an externally assessed component weighted as follows:

School Based Assessment:

Skills and Applications Tasks	50%
Mathematical Investigation	20%

External Assessment:

External Examination	30%
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The student portfolio must be maintained to allow SACE Board moderators to moderate student work during and at the end of the year.

Future:

The subject leads to study in a range of tertiary courses such as mathematical sciences, engineering, computer science, and physical sciences. Students envisaging careers in related fields will benefit from studying this subject.

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