

The background of the top half of the image is a light blue gradient with a pattern of faint, handwritten mathematical formulas in a cursive script. The formulas include trigonometric identities such as $\tan \theta = \frac{\sin \theta}{\cos \theta}$, $\sec^2 \theta = 1 + \tan^2 \theta$, $\csc^2 \theta = 1 + \cot^2 \theta$, $\sin^2 \theta + \cos^2 \theta = 1$, and $\sin^2 \theta = 1 - \cos^2 \theta$.

MATHEMATICS

The Australian Curriculum Mathematics
Years 7-10

Mathematics learning is the ability to understand,
critically respond to and use mathematics in different
social, cultural, and work context.

For more information please contact
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MATHEMATICS

The mathematics content in the Australian Curriculum is organised under 6 interrelated strands:

- Number
- Algebra
- Measurement
- Space
- Statistics
- Probability.

The strands are illustrated in Figure 1. Below.

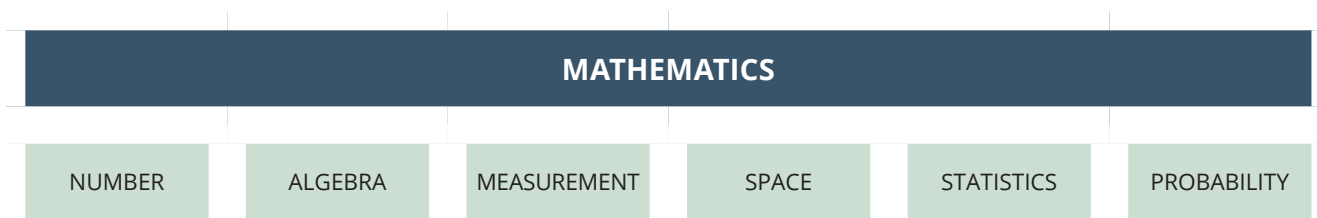


FIGURE 1. MATHEMATICS CONTENT STRUCTURE

Natural connections exist between:

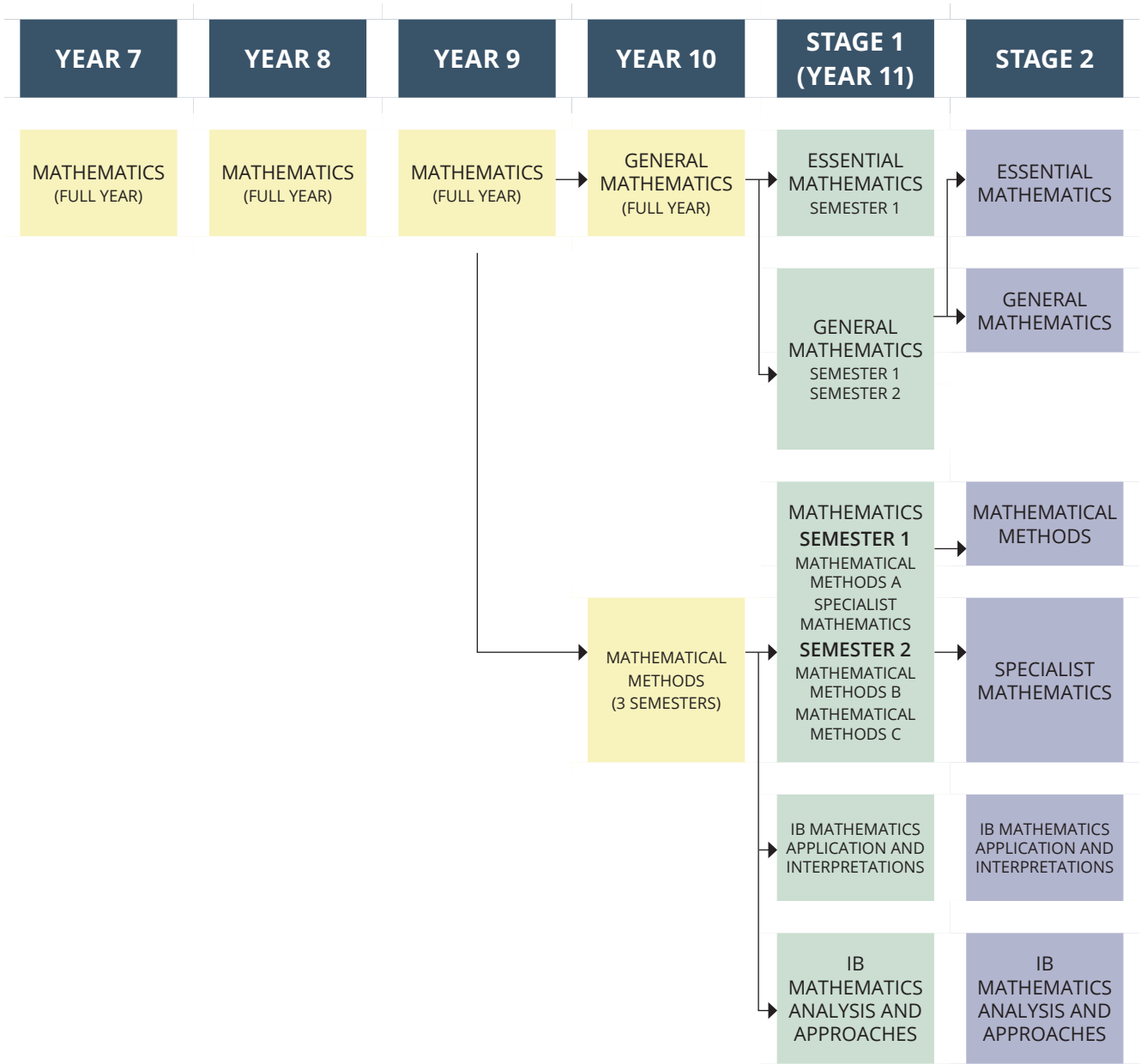
- Number and Algebra
- Statistics and Probability
- Measurement relates not only to Space but all strands, enhancing their practical relevance. Combined with Number, to quantify, compare, communicate, and make meaning of mathematical situations.

Students use the many connections that exist within and across the strands of Mathematics.

Learning experiences in mathematics at RMSC actively involve students in the mathematical processes: to develop their mathematical understanding, fluency, reasoning, and problem-solving skills.

At RMSC mathematics units of work are written based on the content from the AC and explored within the IB MYP framework. The IB MYP inquiry process is especially important for mathematical ideas. Students are guided by a Statement of Inquiry (SOI) that makes connections to local and global contexts. The assessment requirements for each unit and topic are made explicit to students using IB MYP criteria. local and global contexts.

MATHEMATICS



MATHEMATICS

MATHEMATICS YEAR 7

LEVEL Year 7

LENGTH 2 semesters

SPECIAL REQUIREMENTS

Scientific Calculator

CONTENT

Students will study the following topics in Year 7:

- Number and Place Value
- Fractions and Decimals
- Statistics and Probability
- Financial Mathematics
- Patterns and Algebra
- Cartesian Plane
- Measurement
- Geometry

In Year 7 Maths and Science skills, knowledge and understandings are often linked to reinforce the ideas and build connections in learning.

IB MYP ASSESSMENT TYPES

- Basic skill development (+, -, x, ÷)
- Solving problems
- Tests and exams
- Research assignments (theoretical, historical and career related)
- Investigations and practical applications of skills developed

IB MYP CRITERIA

- Knowing and understanding
- Investigating patterns
- Communicating
- Applying mathematics in real life contexts

MATHEMATICS YEAR 8

LEVEL Year 8

LENGTH 2 semesters

SPECIAL REQUIREMENTS

Scientific Calculator

CONTENT

Students will study the following topics in Year 8:

- Real numbers
- Money and financial mathematics
- Patterns and Algebra
- Measurement
- Geometric reasoning
- Probability
- Data representation and Interpretation
- Pythagoras' theorem

Robotics and programming is introduced as a practical STEM (Science, Technology, Engineering and Maths) experience of how mathematical, science and technology can be applied in everyday life and continue to shape our world.

IB MYP ASSESSMENT TYPES

- Basic skill development (+, -, x, ÷)
- Solving problems
- Tests and exams
- Research assignments (theoretical, historical and career related)
- Investigations and practical applications of skills developed

IB MYP CRITERIA

- Knowing and understanding
- Investigating patterns
- Communicating
- Applying mathematics in real life contexts

MATHEMATICS YEAR 9

LEVEL Year 9

LENGTH 2 semesters

SPECIAL REQUIREMENTS

Scientific Calculator

CONTENT

Students will study the following topics in Year 9:

- Trigonometry
- Algebra
- Geometry
- Statistics and Probability
- Coordinate Geometry
- Measurement
- Congruence and Similarity

IB MYP ASSESSMENT TYPES

- Basic skill development (+, -, x, ÷)
- Solving problems
- Tests and exams
- Research assignments (theoretical, historical and career related)
- Investigations and practical applications of skills developed

IB MYP CRITERIA

- Knowing and understanding
- Investigating patterns
- Communicating
- Applying mathematics in real life contexts

MATHEMATICS (continued)

GENERAL MATHEMATICS YEAR 10

LEVEL Year 10

LENGTH 2 semesters

SPECIAL REQUIREMENTS
Scientific Calculator

CONTENT

Students will study the following topics in Year 10:

- Financial Mathematics
- Measurement
- Patterns and Algebra
- Geometry
- Pythagoras and Trigonometry
- Statistics
- Linear and Quadratic Equations
- Probability

IB MYP ASSESSMENT TYPES

- Basic skill development (+, -, x, ÷)
- Solving problems
- Tests and exam
- Research assignments (theoretical, historical and career related)
- Investigations and practical applications of skills developed

IB MYP CRITERIA

- Knowing and understanding
- Investigating patterns
- Communicating
- Applying mathematics in real life contexts

MATHEMATICAL METHODS YEAR 10

LEVEL Year 10

LENGTH 3 semesters

SPECIAL REQUIREMENTS
Graphics Calculator

RECOMMENDED BACKGROUND

A '4' or higher in year 9 mathematics. It is a requirement for those intending to pursue Mathematical Methods (Year 11 Course A, B and C) or Specialist Mathematics (Year 11 Course D) or IB Diploma Mathematics (AA or AI) in the senior secondary years to undertake this course.

CONTENT

Students will study the following topics in Year 10:

- Surds and fractional indices
- Logarithms
- Polynomials
- Graphing conic sections, exponentials, polynomials and transformations of these
- Quadratics
- Surface and volume of complex solids
- Circle geometry
- Cosine and Sine areas of a triangle using trigonometry
- Investigating bivariate data
- Linear Relationships
- Unit Circle

IB MYP ASSESSMENT TYPES

- Basic skill development (+, -, x, ÷)
- Solving problems
- Tests and exam
- Research assignments (theoretical, historical and career related)
- Investigations and practical applications of skills developed

IB MYP CRITERIA

- Knowing and understanding
- Investigating patterns
- Communicating
- Applying mathematics in real life contexts

MATHEMATICS (continued)

ESSENTIAL MATHEMATICS YEAR 11

LEVEL Year 11

LENGTH 1 semesters

SACE CREDITS 10 or 20

SPECIAL REQUIREMENTS
Scientific Calculator

RECOMMENDED BACKGROUND

Students recommended for this course have been identified as students on modified programs and disengaged from mathematics in Year 10.

CONTENT

This subject is intended for students planning to pursue a career in a range of trades or vocations. This includes occupations such as automotive, building and construction, electrical, hairdressing, hospitality, community nursing and services, plumbing and retail industries.

Stage 1 Essential Mathematics consists of the following list topics:

Semester 1

- Topic 1 Calculations, Time and Ratio
- Topic 2 Earning and Spending
- Topic 3 Measurement

For a 10 credit subject, students study 3 topics from the list.

SCHOOL ASSESSMENT TYPES

For each 10 credit subject, students should provide evidence of their learning through 4 assessments. Each assessment type should have a weighting of at least 20%.

- 3 Skills and Application Tasks (SATS)
- At least 1 Mathematical Investigation for each 10 credit or semester course

GENERAL MATHEMATICS YEAR 11

LEVEL Year 11

LENGTH 1 or 2 semesters

SACE CREDITS 10 or 20

SPECIAL REQUIREMENTS
Graphics Calculator

RECOMMENDED BACKGROUND

An A or B from Year 10 General Mathematics. To study General Mathematics at Stage 2, students must complete 2 semesters of Stage 1 General Mathematics.

CONTENT

Stage 1 General Mathematics may be studied as a 10 credit or a 20 credit subject. Successful completion of this subject at a Stage 2 level prepares students for entry to Tertiary courses requiring a non-specialised background in mathematics. Stage 1 General Mathematics consists of the following list of 6 topics:

Semester 1

- Topic 1 Investing and Borrowing
- Topic 2 Measurement
- Topic 4 Applications of Trigonometry

Semester 2

- Topic 3 Statistical Investigation
- Topic 5 Linear and Exponential functions and their graphs
- Topic 6 Matrices and Networks

Each semester of work provides 10 SACE credits. For each 10 credit subject, students should provide evidence of their learning through 4 assessments. Each assessment type should have a weighting of at least 20%.

ASSESSMENT

Semester 1

- 3 Skills and Application Tasks (SATS)
- 1 Mathematical Investigation for each 10 credit or semester course, maximum of 8 single-sided A4 pages

Semester 2

- 3 Skills and Application Tasks (SATS)
- 1 Mathematical Investigation for each 10 credit or semester course, maximum of 8 single-sided A4 pages

MATHEMATICS (continued)

MATHEMATICS YEAR 11

LEVEL Year 11

LENGTH 3, 4 semesters

SACE CREDITS 30, 40

SPECIAL REQUIREMENTS
Graphics Calculator

RECOMMENDED BACKGROUND

A '4' or higher in Year 10 Mathematical Methods.

CONTENT

Stage 1 Mathematics is arranged at Roma Mitchell Secondary College as 4 10 credit subjects. Mathematics develops an increasingly complex and sophisticated understanding of trigonometry, polynomials, calculus, statistics, mathematical arguments and proofs and using mathematical models.

Stage 1 Mathematics provides the foundation for further study in mathematics in Stage 2 Mathematical Methods and Stage 2 Specialist Mathematics. Stage 1 Mathematics consists of the following list of twelve topics:

1. Functions and Graphs
2. Polynomials
3. Trigonometry
4. Counting and Statistics
5. Growth and Decay
6. Introduction to Differential Calculus
7. Arithmetic and Geometric Sequences and Series
8. Geometry
9. Vectors in the Plane
10. Further Trigonometry
11. Matrices
12. Real and Complex Numbers

The following information shows how the topics are arranged each semester to meet the development of concepts and learning for students progressing to Mathematical Methods and Specialist Mathematics in Stage 2.

Successful completion of Maths A, B and C is a pre-requisite for Mathematical Methods in Stage 2.

Successful completion of Maths A, B, C and D is a pre-requisite for Specialist Mathematics in Stage 2.

Semester 1

- Mathematical Methods A
- Specialist Mathematics

Semester 2

- Mathematical Methods B
- Mathematical Methods C

Each semester or 10 credit unit covers 3 topics. A problem-based approach is integral to the development of the mathematical models and associated key concepts in each topic.

Note; A "B" grade or higher in Maths A, B and C is required as a pre-requisite for Mathematical Methods in Year 12. A "B" grade or higher in Maths A, B, C and D is required as a pre-requisite for Specialist Mathematics in Year 12.

For each 10 credit subject, students should provide evidence of their learning through 4 assessments. Each assessment type should have a weighting of at least 20%.

ASSESSMENT

Semester 1

- 3 Skills and Application Tasks (SATS)
- 1 investigation for each 10 credit or semester course.

Semester 2

- 3 Skills and Application Tasks (SATS)
- 1 investigation for each 10 credit or semester course.

MATHEMATICS (continued)

ESSENTIAL MATHEMATICS YEAR 12

LEVEL Year 12

LENGTH 2 semesters

SACE CREDITS 20

THIS SUBJECT HAS AN EXAM

SPECIAL REQUIREMENTS

Graphics Calculator

RECOMMENDED BACKGROUND

A 'C' or higher from Year 11 General Mathematics.

CONTENT

Year 12 Essential Maths is designed for students who have successfully achieved in the Year 11 General Maths course and are planning to pursue a career in the trades or vocational pathways. There is an emphasis on extending students mathematical skills in ways that apply to practical problem-solving in everyday and workplace contexts in flexible and resourceful ways.

There are 3 compulsory topics: Measurement, Statistics and Investments and loans.

Two other topics are chosen from the following: Scales, plans and models, Business applications or an open topic (which would replace Scales, plans and models or Business applications).

ASSESSMENT TYPES

- Skills and Application Tasks (4 to 5) (30%)
- Mathematical Investigation (40%)
- Exam External - 2 hours (30%)

GENERAL MATHEMATICS YEAR 12

LEVEL Year 12

LENGTH 2 semesters

SACE CREDITS 20

THIS SUBJECT HAS AN EXAM

SPECIAL REQUIREMENTS

Graphics Calculator

RECOMMENDED BACKGROUND

A 'B' or higher from Year 11 General Mathematics.

CONTENT

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 concepts in the topics.

Topics cover a diverse range of applications of mathematics, including personal financial management, the statistical investigation process, modelling using linear and non-linear functions, and discrete modelling using networks and matrices. Successful completion of General Mathematics at Stage 2 prepares students for entry to tertiary courses requiring a nonspecialised background in mathematics.

ASSESSMENT TYPES

- Mathematical Investigation (30%)
- SATS (40%)
- Exam External - 2 hours (30%)

MATHEMATICAL METHODS YEAR 12

LEVEL Year 12

LENGTH 2 semesters

SACE CREDITS 20

THIS SUBJECT HAS AN EXAM

SPECIAL REQUIREMENTS

Graphics Calculator

RECOMMENDED BACKGROUND

A 'B' or higher from Year 11 Mathematics A, B and C.

CONTENT

Mathematical Methods develops an increasingly complex and sophisticated understanding of calculus and statistics. By using functions and 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.

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.

ASSESSMENT TYPES

- 6 SATS (50%)
- Mathematical Investigation (20%)
- Exam External - 2 hours (30%)

MATHEMATICS (continued)

SPECIALIST MATHEMATICS YEAR 12

LEVEL Year 12

LENGTH 2 semesters

SACE CREDITS 20

THIS SUBJECT HAS AN EXAM

SPECIAL REQUIREMENTS

Graphics Calculator

RECOMMENDED BACKGROUND

A 'B' or higher from Year 11 Mathematics
A, B, C and D

CONTENT

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

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.

Specialist Mathematics is designed to be studied in conjunction with Mathematical Methods.

ASSESSMENT TYPES

- 6 SATS (50%)
- Mathematical Investigation (20%)
- Exam External - 2 hours (30%)