

Algebra  
 Geometry  
 Statistics  
 Trigonometry  
 Fractions  
 Measurement



# Mathematics

The Mathematics Curriculum at Northpine Christian College provides all students with the opportunity to gain suitable numeracy skills. It provides students with the skills to be confident, creative users and communicators of mathematics and to be able to investigate, represent and interpret situations both at school and in their lives outside of school.

## Curriculum Overview

The Mathematics curriculum at Northpine Christian College caters for all students and offers yearly programs that cover a range of mathematical levels of development. The curriculum focuses on developing increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills.

Years 7 to 10 are organised around three content strands and four proficiency strands.

The content strands are: Number and Algebra, Measurement, 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 and, in Years 7, 8 and 9, form the basis of the reporting elements for all assessment in mathematics. The proficiencies are:

- Understanding
- Fluency
- Problem solving
- Reasoning

In Years 11 and 12 students can study at one of three levels:

General Mathematics – the recommended precursor to further study and training in the technical trades such as toolmaking, sheet-metal working, fitting and turning, carpentry and plumbing, auto mechanics, tourism and hospitality, and administrative and managerial employment in a wide range of industries. It is also suitable as a precursor to tertiary studies in subjects with moderate demand in mathematics.

Mathematical Methods – the recommended precursor to tertiary studies in subjects with high demand in mathematics, especially in the areas of science, medicine, engineering, information technology, finance, business and economics.

Specialist Mathematics – the recommended companion subject to Mathematical Methods. It provides additional preparation for tertiary studies.

The reporting elements for these subjects are Simple Familiar, Complex Familiar and Complex Unfamiliar.

## Course focus

### Year 7, 8 and 9

The Year 7, 8 and 9 Mathematics Curriculum allows for study in mainstream mathematics as well as more advanced aspects of mathematics. It builds a foundation in the three content strands, which then lead on to a range of mathematics levels in Years 10, 11 and 12.

Topics covered in each content strand are:

#### Number and algebra

- Integers
- Fractions, decimals & percentages
- Real numbers
- Financial mathematics
- Indices
- Algebra
- Ratios and rates
- Equations and inequations
- Straight line graphs
- Linear and simultaneous equations

#### Measurement and geometry

- Geometry
- Measurement
- Pythagoras' Theorem and Trigonometry

#### Statistics and probability Chance

- Statistics

### Year 10

The Year 10 Mathematics Curriculum is a bridge providing a progression into the senior pathway of Mathematics.

#### General Mathematics

Topics studied are:

- **Index laws** - growth
- **Statistics** – analysing data, graphs, time-series and bivariate data
- **Measurement** – perimeter, area, surface area, volume
- **Algebra** – expanding, factorising
- **Straight-line graphs** – plotting, gradients, midpoint, distance formula, intercepts, modelling
- **Geometry** – parallel lines, triangles, quadrilaterals, polygons, similar and congruent triangles
- **Consumer arithmetic** – income, taxation, budgeting, SI & CI, investments, loans
- **Pythagoras' Theorem and Trigonometry** – trig ratios, bearings, elevation, depression
- **Probability** – Venn and tree diagrams
- **Equations** – solving, formulas, inequations
- **Quadratics** – trinomials

#### Mathematical Methods

Year 10 Maths Methods leads into Maths Methods and Specialist Maths in Years 11 and 12.

Topics studied are:

- **Statistics** – analysing data, statistical graphs, summary statistics, standard deviation, time-series data, line of best fit
- **Linear Relations** – expressions, equations and inequations, graphs, length, midpoint, perpendicular and parallel, simultaneous equations
- **Measurement** – Pythagoras' Theorem, length, area, surface area, volume, accuracy
- **Quadratic equations and parabolas** – factorizing, solving, sketching, quadratic formula
- **Trigonometry** – sine and cosine rules; exact values, 2D and 3D applications, area of triangle, bearings, quadrants, graphs
- **Probability** – set theory, Venn diagrams, add and multiply rules, conditional probability, two-step, independence, tree diagrams
- **Logarithms, surds and real numbers** – logs, index and log laws, exponential equations
- **Polynomials** – expanding and simplifying, operations, quadratic, cubic, remainder and factor theorems, solving, graphs.

### Years 11 and 12

There are three options of study in mathematics in Years 11 and 12. The following lists the topics studied in each.

#### General Mathematics

Topics studied are:

- **Consumer Arithmetic**
- **Linear and Non-Linear Relationships**
- **Matrices and Matrix Arithmetic**
- **Shape, Measurement and Scale Factors**
- **Applications of Trigonometry**
- **Comparing Data Distributions**
- **Linear Graphs and Models**
- **Bivariate Data**
- **Sequences and Change**
- **Earth Geometry and Time Zones**
- **Growth and Decay in Sequences**
- **Loans, Investments and Annuities**
- **Graphs and Networks**

#### Mathematical Methods

Topics studied are:

- **Quadratics**
- **Arithmetic and Geometric Sequences**
- **Graphs of Relations**
- **Direct and Inverse Variation**
- **Functions, Relations and Transformations**
- **Polynomials**
- **Probability**
- **Binomial Expansion**
- **Exponential Functions and Logarithms**
- **Trigonometric Functions**
- **Rates of Change**
- **Differential and Integral Calculus**
- **Discrete and Continuous Probability Distributions**

#### Specialist Mathematics

Topics studied are:

- **Combinatorics**
- **Vectors**
- **Proofs**
- **Complex Numbers**
- **Trigonometry**
- **Matrices**
- **Mathematical Induction**
- **Integration**
- **Differential Equations**
- **Statistical Inference**

## Career Opportunities

Electrical fitter, Architect, Cutter and turner, Surveyor, Industrial biochemist, Geologist, Teacher, Engineer, Credit manager, Book keeper, Statistician, Accountant, Taxation Officer, Share Market Analyst, Information Technology & Systems Officer, Financial Services Provider.

## Enquiries

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