GENERAL MATHEMATICS

General Mathematics is designed for students who want to extend their mathematical skills. It incorporates a more detailed approach that equips learners for their needs as future citizens, preparing them for tertiary studies, vocational education or work in a complex and rapidly changing world.

Students undertaking this subject will further develop future focused skills as critical and creative thinkers, innovators and problem-solvers in an ever-changing world. They develop their ability to take initiative and promote curiosity in an increasingly complex and data driven world. Learning reinforces prior knowledge and continues to develop key mathematical ideas.

Students in Year 11 and 12 study:

- Money, measurement and relation
- Applied trigonometry, algebra, matrices and univariate data
- The use of matrices and networks to model and solve authentic problems
- Bivariate data, sequences and change and Earth Geometry
- Investing and networking

Topics are developed systematically, with increasing levels of complexity and connection as skills in patterns, order and generality and uncertainty are investigated.

Problems are explored and solved through observation, reflection and logical reasoning using a concise communication system involving written, symbolic, spoken and visual components.

A real-life application of the finance topic assists students to become well-informed consumers of loans, annuities and perpetuities to assist them in comparing products for best purpose, managing money and compound interest. It also contains foundational statistic topics that will equip students with knowledge to apply formulae to spreadsheets.

Emphasis is placed on the mastery of content, ensuring key concepts or procedures are confidently applied. This assists students to make connections between related concepts in both complex familiar and complex unfamiliar situations.

Career Opportunities:

- Business, e.g. trades, nursing, tourism and hospitality
- Commerce, e.g. administrative roles
- Education
- Finance
- IT
- Social science
- The creative industries

MATHEMATICAL METHODS

Students who undertake Mathematical Methods will see the connections between mathematics and other areas of the curriculum and apply their mathematical skills to real-world problems, becoming critical thinkers, innovators and problem-solvers. Through solving problems and developing models, they will appreciate that mathematics and statistics are dynamic tools that are critically important in the future.

The major domains of mathematics in Mathematical Methods are:

- Algebra
- Functions, relations and their graphs
- Calculus
- Statistics

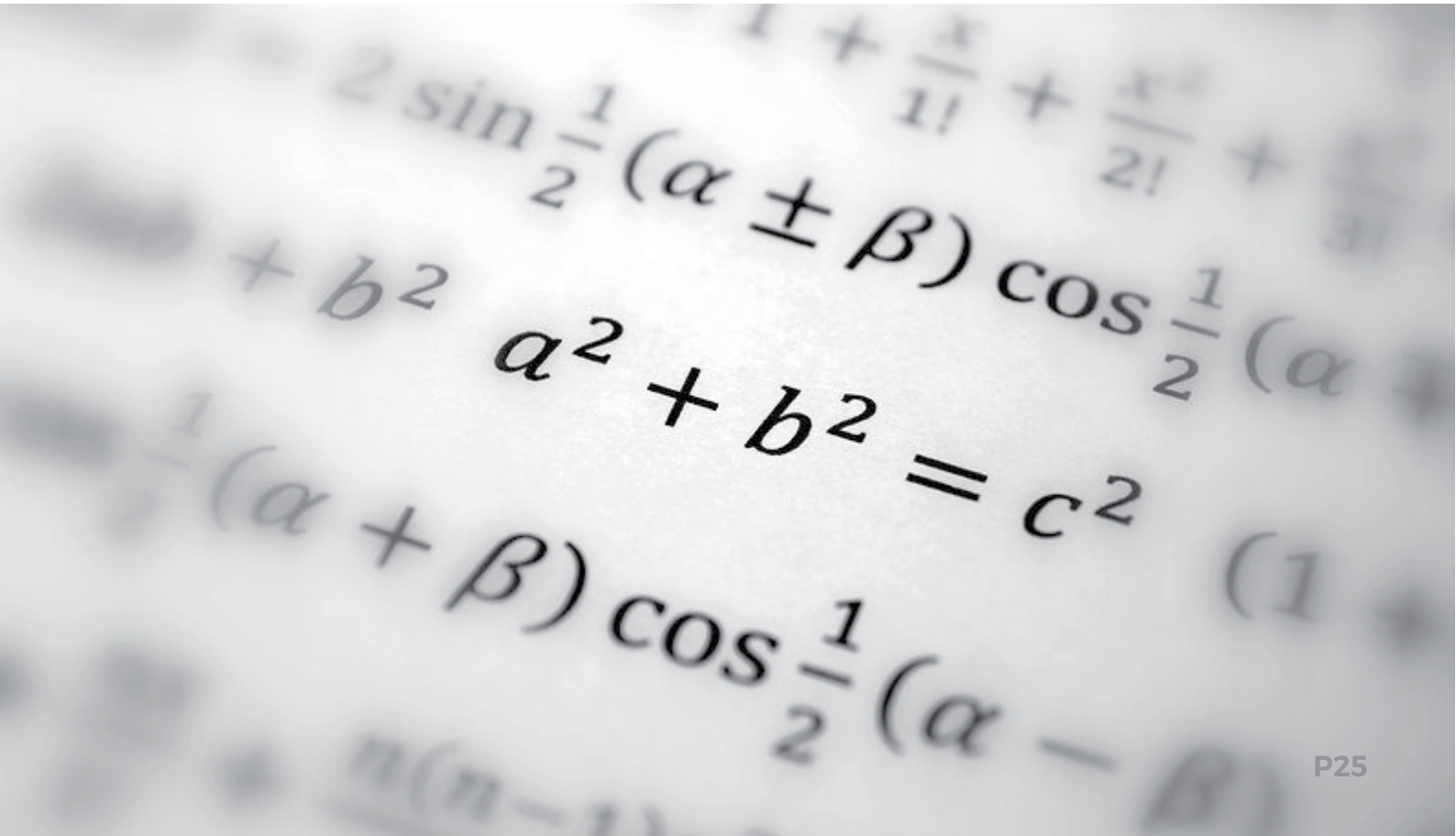
Topics are developed systematically, with increasing levels of sophistication, complexity and connection, and build on algebra, functions and their graphs, and probability from the P–10 Australian Curriculum. Calculus is essential for developing an understanding of the physical world. The domain Statistics is used to describe and analyse phenomena involving uncertainty and variation. Both are the basis for developing effective models of the world and solving complex and abstract mathematical problems. The ability to translate written, numerical, algebraic, symbolic and graphical information from one representation to another is a vital part of learning in Mathematical Methods.

Mathematical Methods is a General subject suited to students who are interested in pathways beyond school that lead to tertiary studies, vocational education or work.

Students who study Mathematical Methods in Year 11 should have achieved at least a C standard in Prep Mathematical Methods in Year 10. To be successful in Mathematical Methods, students will need to consistently work hard over the duration of the course.

Career Opportunities:

- Natural and physical sciences, especially physics and chemistry
- Mathematics and science education
- Medical and health sciences including human biology, biomedical science, nanoscience and forensics
- Engineering including chemical, civil, electrical and mechanical engineering
- Avionics, communications and mining
- Computer science including electronics and software design
- Psychology and business



SPECIALIST MATHEMATICS

Students study this subject in conjunction with Mathematical Methods, ie to study Specialist Mathematics, Mathematical Methods must also be undertaken. A consistent and demanding workload is required, but there are substantial rewards for those students who are prepared to embrace this challenge.

Specialist Mathematics will allow students to further develop their Mathematical knowledge and skills, and this will also translate into the wider fields, for example Physics or Economics.

The Major domains covered in Specialist Mathematics are:

- Combinations and permutations
- Matrices
- Vectors
- Trigonometry and trigonometric functions
- Calculus
- Complex numbers
- Statistics

Combinations and permutations are essential tools when calculating variations or chance. Management of staff becomes easier when one can calculate easily how many different rosters can be created from a team of 15 people.

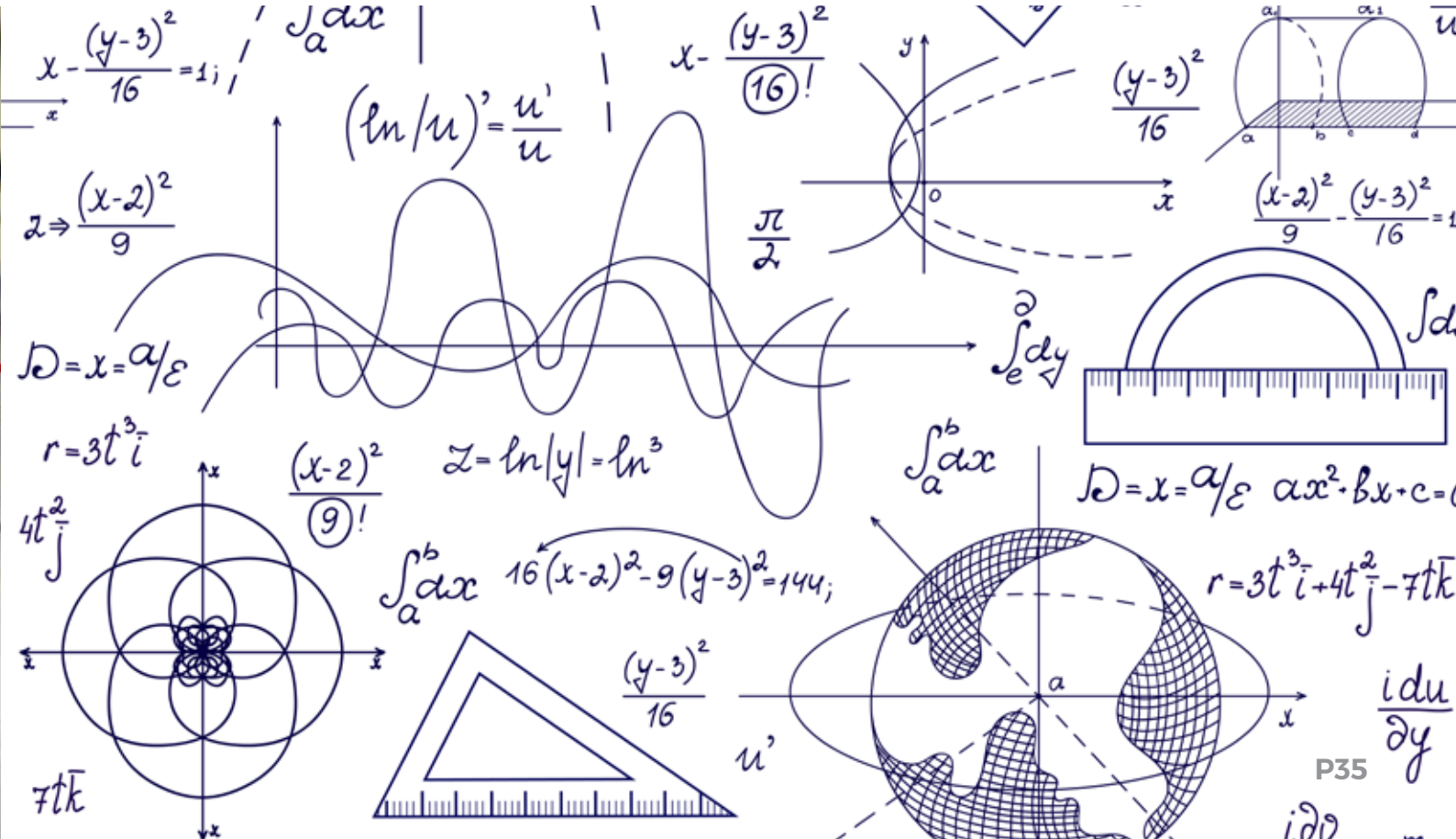
Calculus and trigonometric functions are paramount to calculating difficult engineering problems or calculating the trajectory of an object.

Complex numbers solve those problems that lie outside the realm of “Real numbers”, while Statistics are vital for predicting where new hospitals, schools, and roads should be built.

Specialist Mathematics is a subject suited to students with a passion for Mathematics. Students need to have achieved at least a C+ standard in Prep Mathematical Methods in Year 10, and be interested in tertiary studies beyond Year 12 with a Mathematics, Science or Education base.

Career Opportunities:

- Engineering
- Aviation
- Medicine and Health Sciences
- Education
- Mathematician
- Computer Science
- Economics



ESSENTIAL MATHEMATICS

Students undertaking this subject will further develop future focused skills as critical and creative thinkers, innovators and problem-solvers in an ever-changing world.

They develop their ability to take initiative and promote curiosity in an increasingly complex and data driven world. Learning reinforces prior knowledge and continues to develop key mathematical ideas.

Essential Mathematics has four units, each of which contain a number of topics. Topics are taught in a context relevant to students' needs and interests. Students use their knowledge and skills to investigate realistic problems of interest which involve the application of mathematical relationships and concepts.

Students use their knowledge and skills to investigate real life problems which involve the application of mathematical relationships and concepts.

Essential Mathematics is designed for students who need to continue developing their fundamental mathematical skills. It incorporates a practical approach that equips learners for their needs as future citizens, preparing them for vocational education or work in a rapidly changing world.

Emphasis is placed on the competency of content, ensuring key concepts or procedures are learnt. This assists students to make connections between related concepts and complex familiar situations.

Career Opportunities:

- Trades
- Industry
- Business
- Community Services