The Nature & Beauty of
MATHEMATICS

Course Overview

JOHN MONASH
SCIENCE SCHOOL

The Nature and Beauty of MATHEMATICS

In *Nature and Beauty of Mathematics*, students will explore elegant mathematics outside of the traditional P-12 Mathematics curriculum. Students will explore the world of fractals, multiple dimensions, irrational numbers and their relationship with the natural world, the mathematics of paper folding and topology, the nature of mathematics itself, as well as the complexities of infinity.

Students will be asked to grapple with difficult mathematical ideas and will spend time working on how to best communicate complex ideas in a logical manner. This will be done by exploring the nature of mathematical proofs, through dialogue, or through written form.

Mathematical skills required include:

- Simple algebra (such as solving linear equations and expanding and factorising);
- Trigonometry (SOH CAH TOA);
- Being able to work with fractions.

The focus of the course is geared towards complex ideas rather than learning mathematical skills.

Learning Outcomes

By the end of this course students will:

- Use patterns and technology to recognise rules and generate a formula;
- Communicate their understanding of mathematical ideas;
- Use Year 10 algebra to solve complex mathematical problems.

Homework

Students will be required to complete on average 1 hour of homework per week.

Assessment

For successful completion of this unit students will be required to submit the following tasks:

- A magic trick involving shuffling of cards;
- A short 250 word essay exploring the nature of mathematics;
- A video explaining a unique mathematical concept to the general public;
- Portfolio work (short exercises/explorations relating to class activities).