

# YEAR 9 WONDERFUL WORLD OF MATHOLOGY

This subject is designed to extend and challenge students' mathematics experience. Students will look at algorithms and how they can be used to solve problems. The relationships between coding and rules and the complexity of systems. They will design maths games which demonstrate these principles. They will explore proof in mathematics including how math is derived and discovered. They will look at the hidden assumptions in mathematics and the need to justify these assumptions. Students will develop a portfolio of problem-solving tasks where they prove their conclusions. Note this elective does not provide additional help with core mathematics.

## **Number and Algebra**

Students will learn to:

- Communicate proofs using logical sequences of statements and recognise logic rules.
- Investigate and solve cryptarithms and develop strategies for obtaining the correct solution through experimentation and trial and error.
- Interpret and discuss results of classic and well-known games using mathematical processes and logic statements and rules.
- Discover and employ various strategies for the creation of a solution to various problems through game analysis, spreadsheet construction and Python programming.

## **Critical and Creative Thinking**

Students will learn to:

- Identify, use, reflect on, evaluate and modify a variety of thinking strategies to inform future choices and correct procedures for the solution in non-routine contexts.
- Formulate and test hypotheses, contentions and ideas and collect evidence to support or modify them.
- Engage positively with novelty and difference and become innovative in the ways they define and work through tasks and find solutions.
- Employ creative thinking and strategies to find solutions, synthesise information and understand complex ideas.