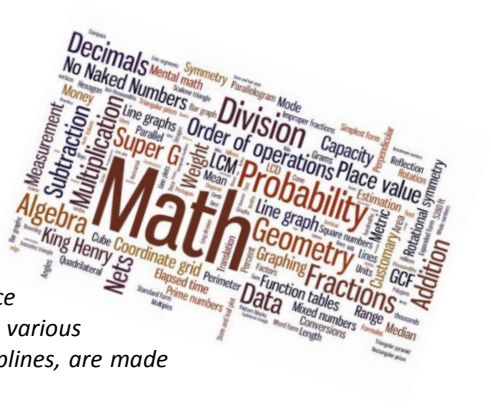
MATHEMATICS

CORE SUBJECT: Across Four Semesters



WHY STUDY MATHEMATICS

Mathematics is important to all of us: in our homes, workplaces and recreational activities. Learning mathematics creates opportunities for and enriches the lives of all Australians. It develops the numeracy capabilities that all students need in their personal, work and civic life and provides the fundamentals on which mathematical specialties and professional applications of mathematics are built. Mathematics aims to instil an appreciation of the elegance and power of mathematical reasoning in students. It ensures that the links between the various components of mathematics, as well as the relationship between mathematics and other disciplines, are made clear.

Mathematics is composed of multiple but interrelated and interdependent concepts and systems which students apply beyond the mathematics classroom. It provides the necessary skills and understanding of other subject areas needed for present roles in society; a technological society; further studies in mathematics; and communication. It encourages students to become self-motivated, confident learners through inquiry and active participation in challenging and engaging experiences.

Mathematics today emphasises developing a student's positive attitude towards their involvement in the subject, through working systematically and logically and communicating with and about mathematics.

COURSE AIMS:

Mathematics aims to ensure that students:

- are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal and work lives and as active citizens
- develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes, and are able to pose and solve problems and reason in *Number and Algebra, Measurement and Geometry, and Statistics and Probability*
- recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study.

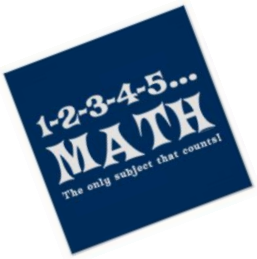
COURSE ORGANISATION:

The study of Mathematics in Years 7 and 8 is a four semester program. Using Australian Curriculum, Mathematics is organised around the interaction of three content strands and four proficiency strands.

The **content strands** are

- Number and Algebra,
- Measurement and Geometry,
- Statistics and Probability.

They describe **what is to be taught and learnt**.



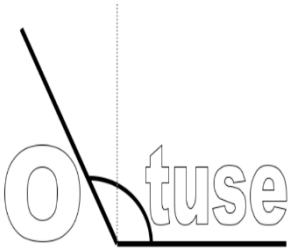
The **proficiency strands** are

- Understanding,
- Fluency,
- Problem Solving,
- Reasoning.

They describe **how** content is explored or developed. **The thinking and doing of mathematics.** They provide the **language to build in the developmental aspects of the learning of mathematics**

Year 7 Units

Semester 1



In Semester 1 Year 7 Maths students accurately calculate fractions and use best buys to compare costs. They formulate and solve authentic problems using numbers. Students describe patterns using indices with whole numbers. They recognise equivalences between fractions and percentages and apply an understanding of ratios. Students identify angles formed by a transversal crossing a pair of lines and apply known geometric facts to draw conclusions. Students establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving. Finally they calculate volumes of rectangular prisms.

Semester 2

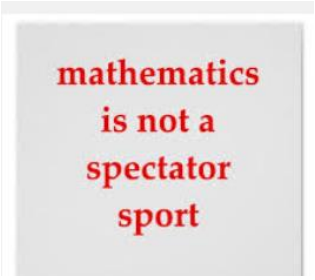
In Semester 2 Year 7, students connect the laws and properties for numbers to algebra. They represent numbers using variables. Students use decimals and percentages, and their equivalences. They solve problems involving percentages and decimals and all four operations. Students then solve problems involving the comparison, addition and subtraction of integers. They interpret simple linear representations and model authentic information. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes. They calculate the mean, median, mode and range for data sets. Students construct stem-and-leaf plots and dot-plots and identify issues involved in the collection of continuous data. They describe the relationship between the median and mean in data displays. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution. Finally students classify triangles and quadrilaterals and describe different views of three-dimensional objects and represent transformations in the Cartesian plane.

YEAR 8 Units

Semester 3

In Semester 1 of Year 8, students use efficient mental and written strategies to carry out the four operations with integers, decimals and fractions. They describe rational and irrational numbers. Students solve problems involving profit and loss. They convert between units of measurement for area and volume. They perform calculations to determine perimeter and area of parallelograms, rhombuses and kites. They name the features of circles and calculate the areas and circumferences of circles. Students solve problems relating to the volume of prisms. They make sense of time duration in real applications. Students solve everyday problems involving rates, ratios and percentages.

Semester 4



In Semester 2 of Year 8, students simplify a variety of algebraic expressions and make connections between expanding and factorising algebraic expressions. They explain issues related to the collection of data and the effect of outliers on means and medians in that data. Students solve linear equations and graph linear relationships on the Cartesian plane. They choose appropriate language to describe events and experiments. Students model authentic situations with two-way tables and Venn diagrams. They determine complementary events and calculate the sum of probabilities. Finally, students identify conditions for the congruence of triangles and deduce the properties of quadrilaterals.

Assessment

Year 7 - Semester 1

The students will sit a test at the end of each Chapter of the unit, 4 in total. These tests could be of an online format or pen and paper.

Year 7 - Semester 2

The Students will sit three Chapter tests with a short learning task to be complete in class. This is an introduction to maths assessment in the form of an assignment.

Year 8

Each Semester the students complete 3 pieces of assessment:

A one period test is held around Week 5/6, this is followed by an extended learning task (completed in class time) for the next 4/5 weeks and finally, the students sit a two period test at the end of the semester. The first paper is an Understanding and Fluency paper and the second paper is a Problem Solving and Reasoning paper.