# MATHEMATICS

In Stage 4, students develop a range of mental strategies to enhance their computational skills operating competently with integers, fractions, decimals and percentages, and apply these in a range of practical contexts. Students are introduced to proportional reasoning and use ratios and rates when solving problems. They investigate divisibility tests, use index notation for numbers with positive integral indices, and explore prime factorisation, squares and cubes, and related square and cube roots, and the concept of irrational numbers.
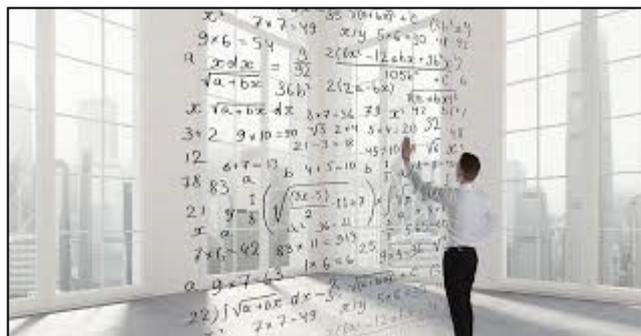
Extending and generalising number patterns leads students into an understanding of the use of pronumerals and the language of algebra. They simplify, evaluate, expand and factorise algebraic expressions and solve simple linear and quadratic equations and illustrate linear relationships on the Cartesian plane.

Students calculate the perimeters and areas of a variety of two-dimensional shapes and find the volumes and capacities of right prisms and cylinders, and solve related problems using appropriate units for area, volume and capacity. They use Pythagoras' theorem to calculate side lengths in right-angled triangles to solve problems in two and three dimensions. Students calculate time durations and apply their understanding of Australian and world time zones to solve problems.

Knowledge of the properties of two-dimensional geometrical figures, angles, parallel lines, perpendicular lines and congruent figures enables students to apply logical reasoning to deduce unknown lengths and angles in figures.

Students construct, interpret and compare a variety of data displays and analyse data using measures such as mean, mode, median and range. They represent events using Venn diagrams and two-way tables, and calculate the probability of simple and complementary events in single-step chance experiments.

By the end of Stage 4, students use mathematical terminology, algebraic notation, diagrams, text and tables to communicate mathematical ideas, and link concepts and processes within and between mathematical contexts. They apply their mathematical knowledge, skills and understanding in analysing real-life situations and in systematically exploring and solving problems using technology where appropriate.