

MATHEMATICS

Learning mathematics creates opportunities for and enriches the lives of all Australians. The Australian Curriculum: Mathematics provides students with essential mathematical skills and knowledge in Number and Algebra, Measurement and Geometry, and Statistics and Probability. 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 has its own value and beauty and the Australian Curriculum: Mathematics aims to instil in students an appreciation of the elegance and power of mathematical reasoning. Mathematical ideas have evolved across all cultures over thousands of years, and are constantly developing. Digital technologies are facilitating this expansion of ideas and providing access to new tools for continuing mathematical exploration and invention. The curriculum focuses on developing increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills. These capabilities enable students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.

The Australian Curriculum: Mathematics 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. In science, for example, understanding sources of error and their impact on the confidence of conclusions is vital, as is the use of mathematical models in other disciplines. In geography, interpretation of data underpins the study of human populations and their physical environments; in history, students need to be able to imagine timelines and time frames to reconcile related events; and in English, deriving quantitative and spatial information is an important aspect of making meaning of texts.

The curriculum anticipates that schools will ensure all students benefit from access to the power of mathematical reasoning and learn to apply their mathematical understanding creatively and efficiently. The mathematics curriculum provides students with carefully paced, in-depth study of critical skills and concepts. It encourages teachers to help students become self-motivated, confident learners through inquiry and active participation in challenging and engaging experiences.

The 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, and Statistics and Probability. They describe what is to be taught and learnt.

The proficiency strands are Understanding, Fluency, Problem Solving, and Reasoning. They describe how content is explored or developed, that is, the thinking and doing of mathematics. They provide the language to build in the developmental aspects of the learning of mathematics and have been incorporated into the content descriptions of the three content strands described above. This approach has been adopted to ensure students' proficiency in mathematical skills develops throughout the curriculum and becomes increasingly sophisticated over the years of schooling.

Again, the content of the Australian Curriculum: Mathematics increases in complexity as children progress across the year levels.

By the end of the Foundation year (Prep), students

- make connections between number names, numerals and quantities up to 10
- compare objects using mass, length and capacity
- connect events and the days of the week
- explain the order and duration of events
- use appropriate language to describe location
- count to and from 20 and order small collections
- group objects based on common characteristics and sort shapes and objects
- answer simple questions to collect information

By the end of Year 6, students

- recognise the properties of prime, composite, square and triangular numbers
- describe the use of integers in everyday contexts
- solve problems involving all four operations with whole numbers
- connect fractions, decimals and percentages as different representations of the same number
- solve problems involving the addition and subtraction of related fractions
- make connections between the powers of 10 and the multiplication and division of decimals
- describe rules used in sequences involving whole numbers, fractions and decimals

- connect decimal representations to the metric system and choose appropriate units of measurement to perform a calculation
- make connections between capacity and volumes
- solve problems involving length and area
- interpret timetables
- describe combinations of transformations
- solve problems using the properties of angles
- compare observed and expected frequencies
- interpret and compare a variety of data displays including those displays for two categorical variables
- evaluate secondary data displayed in the media
- locate fractions and integers on a number line
- calculate a simple fraction of a quantity
- add, subtract and multiply decimals and divide decimals where the result is rational
- calculate common percentage discounts on sale items
- write correct number sentences using brackets and order of operations
- locate an ordered pair in any one of the four quadrants on the Cartesian plane
- construct simple prisms and pyramids
- list and communicate probabilities using simple fractions, decimals and percentages