

Year 8 Syllabus

Year Level Description

The proficiency strands **understanding, fluency, problem-solving** and **reasoning** are an integral part of mathematics content across the three content strands: number and algebra, measurement and geometry, and statistics and probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.

At this year level:

- **understanding** includes describing patterns involving indices and recurring decimals, identifying commonalities between operations with algebra and arithmetic, connecting rules for linear relations with their graphs, explaining the purpose of statistical measures and explaining measurements of perimeter and area
- **fluency** includes calculating accurately with simple decimals, indices and integers; recognising equivalence of common decimals and fractions including recurring decimals; factorising and simplifying basic algebraic expressions and evaluating perimeters and areas of common shapes and volumes of three-dimensional objects
- **problem-solving** includes formulating and modelling practical situations involving ratios, profit and loss, areas and perimeters of common shapes and using two-way tables and Venn diagrams to calculate probabilities
- **reasoning** includes justifying the result of a calculation or estimation as

reasonable, deriving probability from its complement, using congruence to deduce properties of triangles, finding estimates of means and proportions of populations.

Number and Algebra

NUMBER AND PLACE VALUE

Use index notation with numbers to establish the index laws with positive integral indices and the zero index
[\(ACMNA182\)](#)

 Numeracy

Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies
[\(ACMNA183\)](#)

 Numeracy

Measurement and Geometry

USING UNITS OF MEASUREMENT

Choose appropriate units of measurement for area and volume and convert from one unit to another
[\(ACMMG195\)](#)

 Numeracy

Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites
[\(ACMMG196\)](#)

 Numeracy

Investigate the relationship between features of circles


Statistics and Probability

CHANCE

Identify complementary events and use the sum of probabilities to solve problems
[\(ACMSP204\)](#)

 Literacy


 Numeracy

 Critical and creative thinking

Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and' [\(ACMSP205\)](#)

 Literacy

 Numeracy

 Information and Communication Technology (ICT) capability

REAL NUMBERS

Investigate terminating and recurring decimals
[\(ACMNA184\)](#)

 Numeracy

Investigate the concept of irrational numbers, including π
[\(ACMNA186\)](#)

 Numeracy

Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies
[\(ACMNA187\)](#)

 Literacy

 Numeracy

such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area [\(ACMMG197\)](#)

 Literacy

 Numeracy

Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume [\(ACMMG198\)](#)

 Literacy

 Numeracy

Solve problems involving duration, including using 12- and 24-hour time within a single time zone [\(ACMMG199\)](#)


 Literacy

 Numeracy

Represent events in two-way tables and Venn diagrams and solve related problems
[\(ACMSP292\)](#)

 Literacy

 Numeracy

 Critical and creative thinking


DATA REPRESENTATION AND INTERPRETATION


Investigate techniques for collecting data, including census, sampling and observation
[\(ACMSP284\)](#)

 Literacy

 Numeracy

Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes
[\(ACMSP206\)](#)


 Information and Communication Technology (ICT) capability


 Critical and creative thinking

Solve a range of problems involving rates and ratios, with and without digital technologies
[\(ACMNA188\)](#)

 Literacy


 Numeracy

 Information and Communication Technology (ICT) capability

 Critical and creative thinking

MONEY AND FINANCIAL MATHEMATICS

Solve problems involving profit and loss, with and without digital technologies
[\(ACMNA189\)](#)

 Critical and creative thinking

GEOMETRIC REASONING

Define congruence of plane shapes using transformations
[\(ACMMG200\)](#)

 Literacy

 Numeracy

Develop the conditions for congruence of triangles
[\(ACMMG201\)](#)

 Numeracy


Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning
[\(ACMMG202\)](#)

 Literacy

 Numeracy

 Literacy


 Numeracy

 Critical and creative thinking

Explore the variation of means and proportions of random samples drawn from the same population
[\(ACMSP293\)](#)

 Literacy


 Numeracy

 Critical and creative thinking

Investigate the effect of individual data values, including outliers, on the mean and median
[\(ACMSP207\)](#)


 Literacy

 Numeracy


 Critical and creative thinking

 Literacy

 Numeracy

 Information and
Communication

Technology (ICT)
capability

 Critical and creative
thinking

PATTERNS AND ALGEBRA


Extend and apply the
distributive law to the
expansion of algebraic
expressions
[\(ACMNA190\)](#)

 Numeracy

Factorise algebraic
expressions by
identifying numerical
factors [\(ACMNA191\)](#)

 Numeracy

Simplify algebraic
expressions involving
the four operations
[\(ACMNA192\)](#)

 Critical and creative
thinking

 Numeracy

LINEAR AND NON-LINEAR RELATIONSHIPS

Plot linear relationships on the Cartesian plane with and without the use of digital technologies
[\(ACMNA193\)](#)

 Numeracy

 Information and

Communication

Technology (ICT)

capability

Solve linear equations using algebraic and graphical techniques.

Verify solutions by substitution

[\(ACMNA194\)](#)

 Numeracy

 Critical and creative

thinking

Year 8 Achievement Standard

Number and Algebra

At Standard, students solve everyday problems involving rates, ratios and percentages. They describe index laws and apply them to whole numbers. Students describe rational and irrational numbers. They solve problems involving profit and loss. Students make connections between expanding and factorising algebraic expressions. They use efficient mental and written strategies to carry out the four operations with integers. Students simplify a variety of algebraic expressions. They solve linear equations and graph linear relationships on the Cartesian plane.

Measurement and Geometry

Students solve problems relating to the volume of prisms. They make sense of time duration in real applications. Students identify conditions for the congruence of triangles and deduce the properties of quadrilaterals. They convert between units of measurement for area and volume. Students 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.

Statistics and Probability

Students model authentic situations with two-way tables and Venn diagrams. They choose appropriate language to describe events and experiments. Students explain issues related to the collection of data and the effect of outliers on means and medians in that data. They determine the probabilities of complementary events and calculate the sum of probabilities.

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