

# The Australian Curriculum Mathematics

## Year 10

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 applying the four operations to algebraic fractions, finding unknowns in formulas after substitution, making the connection between equations of relations and their graphs, comparing simple and compound interest in financial contexts and determining probabilities of two- and three-step experiments
- **fluency** includes factorising and expanding algebraic expressions, using a range of strategies to solve equations and using calculations to investigate the shape of data sets
- **problem-solving** includes calculating the surface area and volume of a diverse range of prisms to solve practical problems, finding unknown lengths and angles using applications of trigonometry, using algebraic and graphical techniques to find solutions to simultaneous equations and inequalities and investigating independence of events
- **reasoning** includes formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets.

## Year 10 Content Descriptions

### Number and Algebra

Money and financial mathematics

### Measurement and Geometry

Using units of measurement

### Statistics and Probability

Chance

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Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)



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#### Patterns and algebra

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Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)



Simplify algebraic products and quotients using index laws (ACMNA231)



Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232)



Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)



Substitute values into formulas to determine an unknown (ACMNA234)



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#### Linear and non-linear relationships

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Solve problems involving linear equations, including those derived from formulas (ACMNA235)



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Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)



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#### Geometric reasoning

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Formulate proofs involving congruent triangles and angle properties (ACMMG243)



Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244)



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#### Pythagoras and trigonometry

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Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)



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Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence (ACMSP246)



Use the language of 'if ...then', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)



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#### Data representation and interpretation

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Determine quartiles and interquartile range (ACMSP248)

Construct and interpret box plots and use them to compare data sets (ACMSP249)



Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250)



Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251)



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Solve linear inequalities and graph their solutions on a number line (ACMNA236)



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Solve linear simultaneous equations, using algebraic and graphical techniques, including using digital technology (ACMNA237)



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Solve problems involving parallel and perpendicular lines (ACMNA238)



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Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)



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Solve linear equations involving simple algebraic fractions (ACMNA240)



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Solve simple quadratic equations using a range of strategies (ACMNA241)



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Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252)



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Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)

