# Mathematics K–10 Syllabus (2022): Stage 4 Australian Curriculum mapping (Years 7–8)

The Australian Curriculum codes are listed under each syllabus focus area and its associated content groups.

| Numbers and algebra: Computation with integers | Numbers and algebra: Fractions, decimals and percentages | Numbers and algebra: Ratios and rates | Numbers and algebra: Algebraic techniques | Numbers and algebra: Indices | Numbers and algebra: Equations | Numbers and algebra: Linear relationships |
| --- | --- | --- | --- | --- | --- | --- |
| **Compare and order integers**AC9M7N07 | **Compare fractions using equivalence**AC9M7N03AC9M7N04 | **Recognise and simplify ratios**AC9M7N08 | **Examine the concept of pronumerals as a way of representing numbers**No associated ACARA code | **Apply index notation to represent whole numbers as products of powers of prime numbers**AC9M7N02AC9M7N03 | **Solve linear equations up to 2 steps**AC9M7A01AC9M7A03 | **Plot and identify points on the Cartesian plane**No associated ACARA codes |
| **Add and subtract positive and negative integers**AC9M7N07 | **Round decimals to a specified degree of accuracy using approximations**No associated ACARA code | **Solve problems involving ratios**AC9M7N08AC9M7M06 | **Create algebraic expressions and evaluate them by substitution**No associated ACARA code | **Examine cube roots and square roots**No associated ACARA code | **Solve and verify linear equations by substitution**AC9M7A01AC9M7A03 | **Plot linear relationships on the Cartesian plane**AC9M7A05AC9M7A06 |
| **Multiply and divide positive and negative integers**No associated ACARA code | **Identify terminating and recurring decimals**No associated ACARA code | **Recognise and simplify rates**No associated ACARA code | **Extend and apply the laws and properties of arithmetic to algebraic terms and expressions**No associated ACARA code | **Use index notation to establish the index laws with positive-integer indices and the zero index**No associated ACARA code | **Solve quadratic equations**AC9M9A04  | **Solve linear equations using graphical techniques**AC9M8A02 |
| **Apply the 4 operations to integers**No associated ACARA code | **Identify and make use of the relationship between fractions, decimals and percentages to carry out simple conversions**AC9M7N04AC9M9N01 | **Solve problems involving rates**No associated ACARA code | **Extend and apply the distributive law to the expansion of algebraic expressions**No associated ACARA code |  |  |  |
|  | **Examine the concept of irrational numbers**AC9M9N01 | **Interpret and construct distance–time graphs from authentic data**AC9M7A04 |  |  |  |  |
|  | **Order and compare the value of fractions, decimals and percentages**AC9M7N04 | **Factorise algebraic expressions by identifying numerical and algebraic factors**AC9M7A02 |  |  |  |  |
|  | **Solve problems that involve the addition and subtraction of fractions**AC9M7N06 |  |  |  |  |  |
|  | **Solve problems that involve the multiplication and division of fractions and decimals**AC9M7N06 |  |  |  |  |  |
|  | **Represent one quantity as a fraction, decimal or percentage of another, with and without the use of digital tools**AC9M7N09 |  |  |  |  |  |
|  | **Solve problems that involve the use of percentages**AC9M7N06AC9M7N09 |  |  |  |  |  |

| Measurement and space: Length | Measurement and space: Right-angled triangles (Pythagoras’ theorem) | Measurement and space: Area | Measurement and space: Volume | Measurement and space: Angle relationships | Measurement and space: Properties of geometrical figures | Statistics and probability: Data classification and visualisation  | Statistics and probability: Data analysis | Statistics and probability: Probability |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Solve problems involving the perimeter of various quadrilaterals and simple composite figures** AC9M8M01 | **Identify and define Pythagoras’ theorem**AC9M8M06  | **Develop and use formulas to find the area of rectangles, triangles and parallelograms to solve problems**AC9M7M01AC9M8M01  | **Describe the different views of prisms and solids that have been formed from prism combinations** No associated ACARA code | **Apply the language, notation and conventions of geometry**No associated ACARA code | **Classify triangles according to their side and angle properties**AC9M7SP02  | **Classify data as either numerical (discrete or continuous) or categorical (nominal or ordinal) variables**AC9M7ST01AC9M9ST04 | **Calculate and compare the mean, median, mode and range for simple datasets** AC9M7ST01AC9M9ST04 | **Determine probabilities for chance experiments**AC9M8ST03AC9M7P01AC9M8P03 |
| **Describe the relationships between the features of circles**AC9M8M01AC9M7M03 | **Examine problems involving Pythagoras’ theorem**AC9M8M06AC9M9M03AC9M9SP03 | **Develop and use the formula to find the area of circles and sectors to solve problems**AC9M8M01AC9M8M03 | **Develop and apply the formula to find the volume of a prism to solve problems** AC9M7M02 | **Identify geometrical properties of angles at a point** AC9M6M04 | **Classify quadrilaterals and describe their properties** AC9M7SP02AC9M7SP04 | **Display data using graphical representations relevant to the purpose of the data**AC9M7ST02 AC9M9ST04 | **Interpret the effect individual data points have on measures of centre and range**AC9M7ST02AC9M8ST03  | **Determine probabilities for complementary events**AC9M8P01 |
|  |  | **Develop and use the formulas to find the area of trapeziums, rhombuses and kites to solve problems**AC9M8M01  | **Develop the formula for finding the volume of a cylinder and apply the formula to solve problems**AC9M9M01  | **Identify and describe corresponding, alternate and co-interior angles when 2 straight lines are crossed by a transversal, including parallel lines** AC9M7M04 | **Apply the properties of triangles and quadrilaterals**AC9M7M05 | **Interpret data in graphical representations**AC9M9ST04AC9M10ST01 | **Analyse datasets presented in various ways and draw conclusions**AC9M8ST01AC9M8ST02AC9M7ST03 |  |
|  |  | **Choose appropriate units of measurement for area and convert between units**No associated ACARA code | **Choose appropriate units of measurement for volume and capacity and convert between units**AC9M8M02 | **Solve numerical problems involving angles using reasoning**AC9M7M04 |  |  |  |  |

# Mathematics K–10 Syllabus (2022): Stage 5 Australian Curriculum mapping (Years 9–10)

The Australian Curriculum codes are listed under each syllabus focus area and its associated content groups.

| Core number and algebra: Financial mathematics A/B | Core number and algebra: Algebraic techniques A | Core number and algebra: Indices A | Core number and algebra: Equations A | Core number and algebra: Linear relationships A/B | Core number and algebra: Non-linear relationships A/B | Core number and algebra: Numbers of any magnitude |
| --- | --- | --- | --- | --- | --- | --- |
| **Solve problems involving earning money** No associated ACARA code | **Apply the 4 operations to simplify algebraic fractions with numerical denominators** No associated ACARA code | **Extend and apply the index laws to variables, using positive-integer indices and the zero index** AC9M9A01 | **Solve linear equations involving up to 3 steps**No associated ACARA code | **Find the midpoint and gradient of a line segment (interval) on the Cartesian plane**AC9M9A03 | **Examine the connection between algebraic and graphical representations of quadratics and exponentials**AC9M10A03AC9M9A04AC9M10A04AC9M9A05 | **Identify and describe very small and very large measurements**No associated ACARA code |
| **Solve problems involving simple interest** AC9M8M05 | **Apply the distributive law to the expansion of algebraic expressions, and collect like terms where appropriate**AC9M9A02 | **Simplify algebraic products and quotients using index laws** AC9M9A01 | **Solve linear equations involving one algebraic fraction**No associated ACARA code | **Find the distance between 2 points located on the Cartesian plane**AC9M9A03 | **Graph and examine quadratic relationships** AC9M9A06 | **Find absolute and percentage error**AC9M9M04 |
| **Solve problems involving spending money** No associated ACARA code |  | **Apply index laws to numerical expressions with negative-integer indices**AC9M9A01 | **Solve linear equations arising from word problems and substitution into formulas** No associated ACARA code | **Recognise and graph equations**AC9M8A02 | **Graph and examine exponential relationships**No associated ACARA code | **Estimate and round numbers to a specified degree of accuracy**AC9M10N01AC9M10M04 |
| **Solve problems involving compound interest and depreciation**No associated ACARA code |  |  |  | **Examine parallel, horizontal and vertical lines**No associated ACARA code | **Distinguish between linear, quadratic and exponential relationships by examining their graphical representations**AC9M10A04AC9M9A05 | **Express numbers in scientific notation**AC9M9M02 |
|  |  |  |  | **Examine the gradient/slope-intercept form** No associated ACARA code |  |  |
|  |  |  |  | **Find the equations of parallel and perpendicular lines**No associated ACARA code |  |  |

| Core measurement and space: Trigonometry A/B | Core measurement and space: Area and surface area A | Core measurement and space: Volume A | Core measurement and space: Properties of geometrical figures A | Core statistics and probability: Data analysis A/B | Core statistics and probability: Probability A |
| --- | --- | --- | --- | --- | --- |
| **Demonstrate and explain the constancy of trigonometric ratios for a given angle in right-angled triangles**AC9M9SP01 | **Solve problems involving areas and surface areas**AC9M9M01AC9M7SP01 | **Solve problems involving composite solids consisting of right prisms and cylinders**No associated ACARA code | **Identify and describe the properties of similar figures**AC9M9M03AC9M8SP01 | **Examine standard deviation as a measure of spread**No associated ACARA code | **Describe multistage chance experiments involving independent and dependent events** AC9M9P01 |
| **Apply trigonometry to solve right-angled triangle problems**No associated ACARA code | **Develop and apply the formula for surface areas of cylinders**AC9M9M01 |  | **Solve problems using ratio and scale factors in similar figures**AC9M9M03AC9M10M05AC9M9SP02 | **Determine quartiles and interquartile range**AC9M10ST02 | **Solve problems for multistage chance experiments**AC9M9P01 |
| **Solve right-angled triangle problems involving angles of elevation and depression**AC9M10M03 | **Solve problems involving surface areas of cylinders and related composite solids**AC9M9M01AC9M10M01 |  |  | **Represent datasets using box plots and use them to compare datasets**AC9M10ST02AC9M9ST03 | **Design and use simulations to model and examine situations involving probability** AC9M10P02AC9M9P03 |
| **Solve right-angled triangle problems involving bearings**AC9M10M03 |  |  |  | **Identify and describe numerical datasets involving 2 variables**No associated ACARA code |  |
|  |  |  |  | **Represent datasets involving 2 numerical variables, using a scatter plot and a line of best fit, by eye**AC9M10ST03AC9M10ST05 |  |
|  |  |  |  | **Interpret data involving 2 numerical variables, using graphical representations**AC9M10ST03 |  |

| Paths number and algebra: Algebraic techniques B/C | Paths number and algebra: Indices B/C | Paths number and algebra: Equations B/C | Paths number and algebra: Linear relationships C | Paths number and algebra: Non-linear relationships C | Paths number and algebra: Polynomials | Paths number and algebra: Logarithms | Paths number and algebra: Functions and other graphs |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Apply the 4 operations involving algebraic fractions with pronumerals in the denominator**No associated ACARA code | **Apply index laws to algebraic expressions involving negative-integer indices** AC9M9A01 | **Solve monic quadratic equations**AC9M9A04 | **Apply formulas to find the midpoint and gradient/slope of an interval on the Cartesian plane**AC9M9A03 | **Graph parabolas and describe their features and transformations**AC9M10A05AC9M9A06 | **Define and operate with polynomials**No associated ACARA code | **Examine logarithms both numerically and graphically**No associated ACARA code | **Define relations and functions, and use function notation**No associated ACARA code |
| **Factorise algebraic expressions by taking out a common algebraic factor**AC9M10A01AC9M9A02 | **Describe surds** AC9M9N01 | **Solve cubic equations**No associated ACARA code | **Apply the distance formula to find the distance between 2 points located on the Cartesian plane**No associated ACARA code | **Graph exponentials and describe their features and transformations**AC9M10A03 | **Divide polynomials**No associated ACARA code | **Establish and apply the laws of logarithms to solve problems** AC9M10M02 | **Find the domain and range of a function and graph functions**AC9M9A06 |
| **Expand binomial products and factorise monic quadratic expressions**AC9M10A01AC9M9A02 | **Apply knowledge of surds to solve problems**No associated ACARA codes | **Solve linear inequalities and graph their solutions on a number line**AC9M10A02 | **Use various forms of the equation of a straight line**No associated ACARA code | **Graph hyperbolas and describe their features and transformations**AC9M10A05 | **Apply the factor and remainder theorems to solve problems** No associated ACARA code |  | **Graph regions corresponding to linear inequalities in one and 2 variables** AC9M10A02AC9M8A02 |
| **Operate with algebraic fractions involving binomial numerators and numerical denominators**No associated ACARA code | **Describe and use fractional indices**No associated ACARA codes | **Solve linear equations involving algebraic fractions and equations of more than 3 steps** No associated ACARA code | **Solve problems by applying coordinate geometry formulas**No associated ACARA code | **Graph circles and describe their features and transformations** AC9M10A05 | **Graph polynomials**No associated ACARA code |  |  |
| **Expand, factorise and simplify algebraic expressions including special products**AC9M10A01 |  | **Rearrange literal equations**No associated ACARA code | **Identify line and rotational symmetries** No associated ACARA code | **Distinguish between different types of graphs by examining their algebraic and graphical representations and solve problems**AC9M10A05  |  |  |  |
|  |  | **Solve quadratic equations using a variety of methods** AC9M10A01 | **Describe translations, reflections in an axis, and rotations through multiples of 90 degrees on the Cartesian plane, using coordinates**AC9M7SP03 | **Graph and compare polynomial curves and describe their features and transformations**No associated ACARA code |  |  |  |
|  |  | **Solve linear simultaneous equations, both algebraically and graphically**AC9M10A02 |  |  |  |  |  |

| Paths measurement and space: Variation and rates of change A/B | Paths measurement and space: Trigonometry C/D | Paths measurement and space: Area and surface area B | Paths measurement and space: Volume B | Paths measurement and space: Properties of geometrical figures B/C | Paths measurement and space: Circle geometry | Paths measurement and space: Introduction to networks | Paths statistics and probability: Data analysis C | Paths statistics and probability: Probability B |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Identify and describe problems involving direct and inverse variation**No associated ACARA code | **Solve 3-dimensional problems involving right-angled triangles**AC9M10M03 | **Solve problems involving surface areas** No associated ACARA code | **Solve problems involving volumes** AC9M10M01 | **Identify and explain congruence**AC9M8SP01 | **Prove and apply angle and chord properties of circles**No associated ACARA code | **Examine and describe a graph/network** AC9M10SP02AC9M10SP03 | **Plan and conduct a statistical inquiry into a question of interest**AC9M10ST01AC9M9ST05AC9M8ST04 | **Solve problems involving Venn diagrams and 2-way tables** AC9M10ST04AC9M9P02AC9M8P02 |
| **Identify and describe graphs involving direct and inverse variation**AC9M9M05 | **Apply the sine, cosine and area rules to any triangle and solve related problems**No associated ACARA code |  |  | **Develop and use the conditions for congruent triangles**AC9M8SP04 | **Prove and apply tangent and secant properties of circles**No associated ACARA code | **Define a planar graph and apply Euler’s formula for planar graphs** AC9M10SP02AC9M10SP03 | **Examine reports of studies in digital media and elsewhere for information on their planning and implementation** AC9M9ST01AC9M10ST01AC9M8ST03AC9M8ST04 | **Use the language, 'if … then', 'given', 'of' and 'knowing that', to examine conditional statements and identify common mistakes in interpreting the language**AC9M10P01  |
| **Solve problems involving direct and inverse variation and examine the relationship between graphs and equations corresponding to proportionality** AC9M9M05 | **Use the unit circle to define trigonometric functions and represent them graphically**No associated ACARA code |  |  | **Develop and apply the minimum conditions for triangles to be similar**AC9M8SP04 |  | **Explain the concept of Eulerian trails and circuits in the context of the Königsberg bridges problem**AC9M10SP02 |  | **Describe mutually and non-mutually exclusive events using specific language and calculate related probabilities**AC9M9P02 |
| **Analyse graphs that are decreasing or increasing at a constant rate** AC9M9M05 | **Solve trigonometric equations using exact values and the relationships between supplementary and complementary angles**No associated ACARA code |  |  | **Establish and apply properties of similar shapes and solids**No associated ACARA code |  |  |  |  |
| **Analyse the relationship between graphs and variable rates of change**No associated ACARA code |  |  |  | **Apply logical reasoning to numerical problems involving plane shapes** No associated ACARA code |  |  |  |  |
| **Construct graphical representations of rates of change**No associated ACARA code |  |  |  | **Construct formal proofs involving congruent and similar triangles**AC9M10SP01AC9M8SP02 |  |  |  |  |
|  |  |  |  | **Apply logical reasoning to proofs involving plane shapes**AC9M10SP01AC9M8SP02 |  |  |  |  |