Level 7	Level 8	Level 9	Level 10	Level 10A
Number and Algebra				
Number and place value				
Investigate index notation and represent whole numbers as products of powers of prime numbers	Use index notation with numbers to establish the index laws with positive integral indices and the zero index			
Investigate and use square roots of perfect square numbers	Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies and make estimates for these computations			
Apply the associative, commutative and distributive laws to aid mental and written computation and make estimates for these computations				
Compare, order, add and subtract integers				
Real numbers				
Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line	Investigate terminating and recurring decimals	Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems	Solve simple problems involving inverse proportion	Define rational and irrational numbers and perform operations with surds and fractional indices
Solve problems involving addition and subtraction of fractions, including those with unrelated denominators	Investigate the concept of irrational numbers, including π	Apply index laws to numerical expressions with integer indices		Use the definition of a logarithm to establish and apply the laws of logarithms and investigate logarithmic scales in measurement
Multiply and divide fractions and decimals using efficient written strategies and digital technologies	Solve problems involving the use of percentages, including percentage increases and decreases and percentage error, with and without digital technologies	Express numbers in scientific notation		
Express one quantity as a fraction of another, with and without the use of digital technologies	Solve a range of problems involving rates and ratios, including distance-time problems for travel at a constant speed, with and without digital technologies			
Round decimals to a specified number of decimal places				
Connect fractions, decimals and percentages and carry out simple conversions				
Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies				
Recognise and solve problems involving simple ratios				
Money and financial mathematics				
Investigate and calculate 'best buys', with and without digital technologies	Solve problems involving profit and loss, with and without digital technologies	Solve problems involving simple interest	Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies	
Patterns and algebra				
Introduce the concept of variables as a way of representing numbers using letters	Extend and apply the distributive law to the expansion of algebraic expressions	Extend and apply the index laws to variables, using positive integer indices and the zero index	Factorise algebraic expressions by taking out a common algebraic factor	Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems
Create algebraic expressions and evaluate them by substituting a given value for each variable	Factorise algebraic expressions by identifying numerical factors	Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate	Simplify algebraic products and quotients using index laws	Devise and use algorithms and simulations to solve mathematical problems
Extend and apply the laws and properties of arithmetic to algebraic terms and expressions	Simplify algebraic expressions involving the four operations	Apply set structures to solve real-world problems	Apply the four operations to simple algebraic fractions with numerical denominators	
Design and implement mathematical algorithms using a simple general purpose programming language	Use algorithms and related testing procedures to identify and correct errors		Expand binomial products and factorise monic quadratic expressions using a variety of strategies	
			Substitute values into formulas to determine an unknown and re-arrange formulas to solve for a particular term	
			Implement algorithms using data structures in a general-purpose programming language	
Linear and non-linear relationships				
Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point	Plot linear relationships on the Cartesian plane with and without the use of digital technologies	Find the distance between two points located on a Cartesian plane using a range of strategies, including graphing software	Solve problems involving linear equations, including those derived from formulas	Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations
Solve simple linear equations	Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution	Find the midpoint and gradient of a line segment (interval) on the Cartesian plane using a range of strategies, including graphing software	Solve linear inequalities and graph their solutions on a number line	Solve simple exponential equations
Investigate, interpret and analyse graphs from real life data, including consideration of domain and range	Plot graphs of non-linear real life data with and without the use of digital technologies, and interpret and analyse these graphs	Sketch linear graphs using the coordinates of two points and solve linear equations	Solve simultaneous linear equations, using algebraic and graphical techniques including using digital technology	Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation

VICTORIA State Government

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		Graph simple non-linear relations with and without the use of digital technologies and solve simple related equations	Solve problems involving gradients of parallel and perpendicular lines	Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts
			Explore the connection between algebraic and graphical representations of relations such as simple quadratic, reciprocal, circle and exponential, using digital technology as appropriate	Use function notation to describe the relationship between dependent and independent variables in modelling contexts
			Solve linear equations involving simple algebraic fractions	Solve simultaneous equations using systematic guess-check-and-refine with digital technology
			Solve simple quadratic equations using a range of strategies	
			Solve equations using systematic guess-check-and-refine with digital technology	

Achievement Standard				
Students solve problems involving the order, addition and subtraction of integers. They make the connections between whole numbers and index notation and the relationship between perfect squares and square roots. They solve problems involving all four operations with fractions, decimals, percentages and their equivalences, and express fractions in their simplest form. Students compare the cost of items to make financial decisions, with and without the use of digital technology. They make simple estimates to judge the reasonableness of results. Students use variables to represent arbitrary numbers and connect the laws and properties of number to algebra and substitute numbers into algebraic expressions. They assign ordered pairs to given points on the Cartesian plane and interpret and analyse graphs of relations from real data. Students develop simple linear models for situations, make predictions based on these models, solve related equations and check their solutions.	Students use efficient mental and written strategies to make estimates and carry out the four operations with integers, and apply the index laws to whole numbers. They identify and describe rational and irrational numbers in context. Students estimate answers and solve everyday problems involving profit and loss rates, ratios and percentages, with and without the use of digital technology. They simplify a variety of algebraic expressions and connect expansion and factorisation of linear expressions. Students solve linear equations and graph linear relationships on the Cartesian plane.	Students apply the index laws using integer indices to variables and numbers, express numbers in scientific notation, solve problems involving very small and very large numbers, and check the order of magnitude of calculations. They solve problems involving simple interest. Students use the distributive law to expand algebraic expressions, including binomial expressions, and simplify a range of algebraic expressions. They find the distance between two points on the Cartesian plane and the gradient and midpoint of a line segment using a range of strategies including the use of digital technology. Students sketch and draw linear and non-linear relations, solve simple related equations and explain the relationship between the graphical and symbolic forms, with and without the use of digital technology.	Students recognise the connection between simple and compound interest. They solve problems involving linear equations and inequalities, quadratic equations and pairs of simultaneous linear equations and related graphs, with and without the use of digital technology. Students substitute into formulas, find unknown values, manipulate linear algebraic expressions, expand binomial expressions and factorise monic and simple non-monic quadratic expressions, with and without the use of digital technology. They represent linear, quadratic and exponential functions numerically, graphically and algebraically, and use them to model situations and solve practical problems.	