



Algebra Refresh



Phase 1: Algebra with identified “worry point” if not achieved during the progress.

Must achieve during first six months	Must achieve during first year	Must achieve during second year	Progress outcome by end of year 3 Number & Algebra	Maths Aotearoa
<ul style="list-style-type: none"> Copy, continue, create and describe a repeating pattern with two elements 	<ul style="list-style-type: none"> Copy, continue, create and describe a repeating pattern with 3 elements, and identify the missing elements in a pattern. 	<ul style="list-style-type: none"> Use both the unit of repeat and the ordinal position (1st, 2nd, 3rd) of a repeating pattern to predict further elements Show that in an equation, both sides of the equal sign represent the same quantity. 	<p>I know that: Patterns are made of numeric or spatial elements in a sequence governed by a rule Identifying the rule of a pattern involves working out the unit of repeat. An algorithm is a sequence of rules that can be followed. The equal sign is relational, it shows that the two sides of an equation are the same.</p> <p>I know how to:</p> <ul style="list-style-type: none"> Find another element of a pattern given part of it Describe a rule that explains how a pattern works Follow, and create patterns from rules or simple algorithms Solve true and false number sentences and open number sentences 	Book 1a: Unit 1 Unit 3 Unit 4 Book 1b: Unit 1 Unit 2 Unit 4 Book 2a: Unit 1 Unit 3 Unit 5

Phase 2: Algebra with identified “worry point” if not achieved during the progress

Must achieve during year 4	Must achieve during year 5	Progress outcomes by end of year 6	
<ul style="list-style-type: none"> Solve addition and subtraction open number sentences using the relationship between the two sides of the equals sign. 	<ul style="list-style-type: none"> Solve open number sentences involving all operations using the relationship between the two sides of the equal sign. 	<p>I know that: The equal (=) and inequality (<, >) signs show relationships In a pattern, the relationship between the ordinal position (1st, 2nd, 3rd) and the corresponding element is useful for finding the pattern rule. Tables and XY graphs provide a way of organising the positions and elements of a pattern to reveal relationships or rules. An algorithm is a set of instructions for solving a problem.</p> <p>I know how to:</p> <ul style="list-style-type: none"> Solve open number sentences and true or false number sentences involving equality and inequality Use tables, XY graphs and diagrams to find relationships between elements of growing patterns Develop a rule in words about a linear pattern use a rule to make predictions Create and use algorithms for making decisions that involve clear choices 	Book 2b Unit 1 Unit 5 Book 3a: Unit 5 Book 3b: Unit 5

Phase 3 Algebra	
Progress Outcomes by end of year 8	
<p>I know that: The inverse property applies to addition (e.g $3 + - 3 = 0$) and multiplication (e.g $3 \times \frac{1}{3} = 1$). The commutative, associative and identity properties work the same for all numbers. Operations to both sides preserve the balance of an equation. A variable can be used to stand for any number. Functions are relationships or rules that uniquely associate members of one set with members of another set. Linear patterns and functions have a constant rate of change. They can be represented as ordered pairs, tables XY graphs, and a rule (equation) Algorithms help solve problems in a systematic way. Their instructions are created, tested and revised.</p> <p>I know how to:</p> <ul style="list-style-type: none"> • Use words and symbols to describe and represent the properties of operations. (Commutative, distributive, associative, inverse and identity) • solve linear equations by trial and improvement and by applying inverse operations. • Use variables to represent a rule about a linear pattern, and use the rule to make predictions. • represent and connect linear functions using tables, equations, and XY graphs. • Create and use algorithms to identify, interpret and explain patterns. 	<p>Book 4a: Unit 3</p> <p>Book 4b: Unit 3</p>
Phase 4 Addition & Subtraction	
Progress Outcomes by the end of year 10	
<p>I know that: The properties of operations (commutative, associative, inverse and identity) apply to numbers and variables. There is an order of operations when using numbers and variables. Functions can be expressed as algebraic expressions, XY graphs, tables, or in words. There are many different, equivalent equations for expressing a linear function. Algorithms can be efficient or inefficient. More efficient algorithms have fewer steps.</p> <p>I know how to:</p> <ul style="list-style-type: none"> • Express functions arising from linear and simple quadratic patterns • Graph linear functions and interpret gradient, x-intercept, and y-intercept in relation to the function or practical situation represented. • Substitute into, rearrange, and simplify expressions, combining like terms as needed. • Create or use a formula, rule, equation or inequality, solve for unknowns, and evaluate by substitution. • Identify how sequence, selection, and iteration are used in algorithms for generating patterns. 	