NCEA Level 1 Mathematics

New lessons
Supplementary Resources

	2024 Standard			
	1.1	1.2	1.3	1.4
**Algebra	1. Expressions and Formulas**				
1. Origins of Algebra				
Early Algebra (NEW)		■		■
"Modern" Algebra (NEW)		■		■
2. Simplifying Expressions				
1. Adding and Subtracting Like Terms		■		■
2. Exponent Laws: Multiply and Divide		■		■
3. Exponent Laws: Brackets and Square Roots		■		■
3. Algebraic Formulas				
1. Substituting Into and Evaluating Algebraic Expressions		■		■
2. Rearranging Formulas		■		■
3. Manipulating Formulas		■		■
4. Fractions				
1. Adding and Subtracting Algebraic Fractions		■		■
2. Multiplying and Dividing Algebraic Fractions		■		■
5. Expanding and Factorising				
1. Expanding and Factorising		■		■
2. Expanding Single Brackets		■		■
3. Factorising Single Brackets		■		■
4. Expanding Double Brackets with Coefficients		■		■
5. Expanding Cubic Expressions		■		■
6. Factorising Quadratics		■		■
7. Factorising Quadratics with a>1		■		■
8. Simplifying Rational Expressions		■		■
**Algebra	2. Linear Relationships**				
1. Forming and Solving				
1. Linear Equations		■		■
2. Solving Linear Equations		■		■
3. Solving Linear Equations with Fractions		■		■
4. Linear Word Problems		■		■
5. Applications of Linear Equations		■		■
2. Simultaneous Equations				
1. Simultaneous Equations		■		■
2. Solving Simultaneous Equations		■		■
3. Solving Simultaneous Equations Using Substitution		■		■
4. Solving Simultaneous Equations Using Elimination		■		■
5. Solving Simultaneous Equations Using Graphs		■		■
6. Applications of Simultaneous Equations		■		■
7. Applications of Solving Simultaneous Equations		■		■
3. Graphing and Modelling				
1. Linear Patterns and Rules		■		■
2. How to Model Situations		■		■
3. Drawing the Line from an Equation		■		■
4. Graphs From Equations		■		■
5. Plotting Linear Relationships		■		■
6. Graphing using the Gradient-Intercept Method		■		■
7. The Gradient of a Line		■		■
8. Slope and Intercept from a Graph		■		■
9. Equations From Graphs		■		■
4. Applications (Supplementary Resources)				
1. Linear Relationships		■		■
2. Applications of Linear Relationships		■		■
3. Applications of Solving Linear Equations		■		■
4. Global Warming		■		■
5. Gym Membership		■		■
6. Luke's Loan		■		■
7. The Leaky Bike Tyre		■		■
8. The Road Trip		■		■
**Algebra	3. Quadratic Relationships**				
1. Forming and Solving				
1. Quadratic Relationships		■		■
2. Quadratic Patterns				■
3. Rules for Quadratic Patterns				■
4. Quadratic Equations				■
5. Solving Quadratic Equations				■
6. Solving Quadratic Equations with a>1				■
2. Graphing				

NCEA Level 1 Mathematics

	2024 Standard			
	1.1	1.2	1.3	1.4
1. Plotting Quadratic Relationships				■
2. Graphing Parabolas Using the Vertex Method				■
3. Graphing Parabolas Using the Intercept Method				■
4. Transformations of Parabolas				■
3. Applications (Supplementary Resources)				
1. Applications of Parabolas				■
2. Applications of Quadratic Equations (Factorising)				■
3. Pole Vault Training				■
4. Skateboard Park				■
5. Suspension Bridge				■
6. Trebuchet				■
4. Inequations				
1. Introduction to Inequalities		■		■
2. Solving Inequalities		■		■
3. Rearranging Inequalities		■		■
4. Solving Quadratic Inequalities		■		■
5. Inequations		■		■
6. Chained Inequalities		■		■
7. Review Lesson: Inequalities		■		■
8. Solving Linear Inequations		■		■
9. Applications of Inequations	■	■		■
5. Exponential Relationships				
1. Introduction to Exponential Functions				■
2. Exponential Equations		■		■
3. Exponential Equations: Practice		■		■
4. Equations and Graphs of Exponential Relationships		■		■
5. Initial Values of Exponential Graphs		■		■
6. Translations of Exponential Graphs		■		■
7. Applications of Exponential Relationships		■		■
8. Applications of Exponential Equations		■		■
9. Fruit Flies		■		■
10. Travelling Circus		■		■
6. Other Relationships				
1. Other Relationships		■		■
2. Step Functions		■		■
3. Piecewise Linear Graphs		■		■
4. Finding Piecewise Equations		■		■
5. Non-Linear Piecewise Functions		■		■
6. Internet Providers		■		■
7. Mere's Plants		■		■
8. NZ Tax Rates and Brackets		■		■
9. Saving Money		■		■
7. Extension (Sequences and Curved Shapes)				
1. Sums of Consecutive Numbers		■		■
2. Sums and Sequences				■
3. Averages of Sequences				■
4. Multiplying Consecutive Numbers				■
5. Circles and Spheres				■
6. Magic Squares				■
7. Rugby Balls				■
Measurement | 1. Properties of Shapes				
1. Units of Measurement				
1. Metric Units and Reading Scales		■		■
2. Choosing Appropriate Units		■		■
3. Metric Unit Conversions		■		■
4. Historical Measurement Systems (NEW)		■		
5. The Metric System (NEW)		■		
6. Māori Measurement Systems (NEW)		■		
2. Perimeter and Area				
1. Perimeter		■		■
2. Applications of Perimeter		■		■
3. Area				■
4. Estimating Area (NEW)		■		
5. Area Scaling (NEW)				■
6. Surface Area of Prisms and Pyramids		■		■
5. Surface Area of Curved Solids		■		■
3. Volume				

NCEA Level 1 Mathematics

	2024 Standard			
	1.1	1.2	1.3	1.4
1. Volume of Prisms and Pyramids		■		■
2. Capacity		■		■
3. Volume of Curved Solids		■		■
4. Estimating Volume (NEW)		■		
5. Volume Scaling (NEW)		■		■
4. Application (Supplementary Resources)				
Community Garden Project (no answer)		■		
Filling the Pond (no answer)		■		
Garden Sculpture (no answer)		■		
Hair Today and Gone Tomorrow (no answer)		■		
Small Bowls Badge Design (no answer)		■		
Where Have All The Tanks Gone? (no answer)		■		
**Measurement	2. Circles**				
1. Circumference and Area				
1. Circumference of Circles		■		■
2. Area of Circles		■		■
**Measurement	3. Pythagoras and Trigonometry**				
1. Pythagoras's Theorem				
1. Parts of a Triangle and the Hypotenuse		■		■
2. Pythagoras' Theorem		■		
3. Pythagoras' Theorem in 3D				■
4. Building with Pythagoras		■		
2. Trigonometry				
1. Introduction to Trigonometry				■
2. Trigonometric Ratios				■
3. Finding Side Lengths Using Trigonometry				■
4. Finding Angles Using Trigonometry				■
5. Trigonometry in 3D				■
6. Using Trigonometric Functions in Real World Applications				■
7. Using Inverse Trigonometric Functions in Real World Applications				■
8. Applications of Trigonometry in Coding				■
9. Review Lesson: Trigonometric Ratios				■
3. Application				
1. Pythagoras and Trigonometry				■
2. 3D Problems Using Right-Angled Triangles				■
Space				
1. Angle Laws				
1. Introduction to Angles				■
2. Angles on Parallel Lines				■
3. Angles on Parallel Lines: Practice				■
4. Interior and Exterior Angles of Polygons				■
5. Interior and Exterior Angles of Triangles: Practice				■
6. Regular Polygons and Quadrilaterals				■
7. Angles in Polygons				■
8. Similar Triangles				■
9. Similar Triangles and Angles				■
10. Similar Triangles and Ratios				■
2. Angle Properties				
1. Circle Geometry				■
2. Circle Geometry (Exam Questions)				■
3. Circular Angle Properties				■
4. Cyclic Quadrilaterals				■
3. Relative Position				
1. Angles of Elevation and Depression				■
2. Bearings				■
3. Bearings with Right-Angled Triangles				■
4. Bearings with Trigonometry and Pythagoras' Theorem				■
5. Bearings and 3D Trigonometry (Exam Questions)				■
**Number	1. Number Systems and Rounding**				
1. Number Systems				
Number Systems Around the World (NEW)		■		■
Maori Number Systems (NEW)		■		■
The Decimal System (NEW)		■		■
Introduction to Scientific Notation (Standard Form) - Large Numbers		■		
Introduction to Scientific Notation (Standard Form) - Small Numbers		■		
2. Rounding				
1. Rounding Sensibly		■		■

NCEA Level 1 Mathematics

Legend: New lessons (green) · Supplementary Resources (orange)

Topic	2024 Standard 1.1	1.2	1.3	1.4
2. Precision and Accuracy		■	■	■
3. Consequences of Rounding		■	■	■
4. Absolute vs. Relative Error		■	■	■
5. Limits of Accuracy		■	■	■
6. Precision in Context		■	■	■
7. Leading Digit Approximation		■	■	■
8. Propagation of Error		■	■	■
9. Rounding Based on Given Values		■	■	■
10. Rounding to Decimal Places		■	■	■
11. Rounding to Significant Figures		■	■	■
12. Rounding Negative Numbers		■	■	■
**Number	2. Decimals, Fractions and Percentages**				
1. Multiplying and Dividing Fractions		■	■	■
2. Adding and Subtracting Fractions		■	■	■
3. Mixed Applications of Fractions		■	■	■
4. Converting Between Fractions, Decimals and Percentages		■	■	■
5. Percentage of an Amount		■	■	■
6. Percentage Change		■	■	■
7. Increasing or Decreasing by a Percentage		■	■	■
8. Finding the Original Amount		■	■	■
9. Mixed Applications of Percentages		■	■	■
10. Goods and Services Tax		■	■	■
11. Income Tax		■	■	■
**Number	3. Ratios and Rates**				
1. Rates		■	■	■
2. Exchange Rates		■	■	■
3. Operations with Ratios		■	■	■
4. Applications of Ratios		■	■	■
5. Direct and Inverse Proportions		■	■	■
**Number	4. Interest**				
1. Introduction to Interest		■	■	■
2. Calculating Simple Interest		■	■	■
3. Simple and Compound Interest		■	■	■
4. Compound Interest Basic Formula		■	■	■
5. Compound Interest – Months and Weeks		■	■	■
6. Depreciation		■	■	■
7. Rearranging the Compound Interest Formula		■	■	■
8. Rearranging Compound Interest – Months and Weeks		■	■	■
**Number	5. Applications (Supplementary Resources)**				
Assignment 1: Fish and Chips		■	■	■
Assignment 2: European Holiday		■	■	■
Assignment 3: Gaming Company		■	■	■
Assignment 4: Theme Park		■	■	■
Assignment 5: Real Estate		■	■	■
Carbon Credits		■	■	■
Extended Task 1: Machine Replacement		■	■	■
Extended Task 2: Dino Day Out		■	■	■
Extended Task 3: Got Enough Milk?		■	■	■
Extended Task 4: Sold Out Arena		■	■	■
Extended Task 5: Journey to London		■	■	■
Extended Task 6: Theme Park		■	■	■
Extended Task 7: Wedding Planning		■	■	■
Extended Task 8: Summer Job		■	■	■
Extended Task 9: At the Zoo		■	■	■
Mike and Huia's Trip to England		■	■	■
**Statistics	1. General Statistics**				
1. Key concepts				
1. Statistical Investigations	■		■	
2. PPDAC: The Statistical Enquiry Cycle	■		■	
3. Data and Averages	■		■	
4. Correlation vs. Causation	■		■	
5. Measures of Centre and Spread: Finding and Calculating (NEW)	■		■	
6. Bias in Data	■		■	
7. Evaluating Claims (NEW)	■		■	
8. History of Statistics (NEW)	■		■	
9. Writing Statistical Reports (NEW)	■		■	

NCEA Level 1 Mathematics

	2024 Standard			
	1.1	1.2	1.3	1.4
2. Collecting Data				
1. Types of Data (NEW)	■		■	
2. Why Sample?	■		■	
3. Sampling Methods	■		■	
4. Managing Sources of Variation (NEW)	■		■	
5. Introduction to Sample Variability	■		■	
6. Tikanga of Data Collection (NEW)	■		■	
7. Ethics of Data (NEW)	■		■	
3. Managing data				
1. Data: Data Cleaning	■		■	
2. Introduction to Spreadsheets	■		■	
3. Plotting Using a Calculator	■		■	
4. Plotting Using a Spreadsheet	■		■	
5. Using CensusAtSchool	■		■	
6. Using NZGrapher	■		■	
Statistics | 2. Bivariate Investigations				
1 Key Concepts				
1. Introduction to Bivariate Data	■		■	
2. Bivariate Data (Exam Questions)	■		■	
3. Bivariate Variables	■		■	
4. Cleaning Bivariate Data	■		■	
2. Analysing Bivariate Data				
1. Features of Scatter Graphs (NEW)	■		■	
2. Analysing Trend by Eye	■		■	
3. Lines of Best Fit by Eye	■		■	
4. Conclusions about Relationships (NEW)	■		■	
5. Making Predictions (NEW)	■		■	
3. Practice (Supplementary Resources)				
1. Bivariate Assessment: Body Proportions	■		■	
2. Bivariate Assessment: Stopping Distance	■		■	
3. Bivariate Investigation: Body Proportions	■		■	
4. Bivariate Investigation: Stopping Distance	■		■	
Statistics | 3. Multivariate Investigations				
1. Key Concepts				
1. Multivariate Data	■		■	
2. Multivariate Data (Exam Questions)	■		■	
3. Problem: Forming a Comparative Investigative Question	■		■	
4. Plan: Sample Size	■		■	
5. Plan And Data: Sampling	■		■	
2. Analysing Multiviariate Data				
1. Analysis: Measures of Centre	■		■	
2. Analysis: Measures of Spread	■		■	
3. Analysis: Shape	■		■	
4. Analysis: Shift	■		■	
5. Informal Inferences using Shift (NEW)	■		■	
6. Informal Inferences using DBM/OVS (NEW)	■		■	
7. Analysis: Making an Inference Using Shift	■		■	
8. Conclusion: Writing the Conclusion	■		■	
3. Practice (Supplementary Resources)				
1. Multivariate Assessment - Olympic Results	■		■	
2. Practice Assessment - Olympic Results	■		■	
3. Multivariate Assessment - High School Test Results	■		■	
4. Practice Assessment - High School Test Results	■		■	
4. Time Series Investigations				
1. Introduction to Time Series	■		■	
2. Time Series Data	■		■	
3. Time Series Data (Exam Questions)	■		■	
4. PPDAC for Time Series (NEW)	■		■	
5 Gathering and Plotting Time Series Data	■		■	
6. Seasonal Trends and Cyclic Effects	■		■	
7. Long-term Trends	■		■	
8. Analysing Time Series Trend (NEW)	■		■	
9. Forecasting (NEW)	■		■	
Probability				
1. Concepts				
1. Probability Introduction	■		■	
2. Probability	■		■	

NCEA Level 1 Mathematics

	2024 Standard					
	1.1	**1.2**	**1.3**	**1.4**	New lessons	
3. Probability Concepts	■		■			Supplementary Resources
4. Probability Trees	■		■			
5. Two-Way Tables	■		■			
6. History of Probability (NEW)	■		■			
2. Probability Experiments						
1. Probability Experiment — Problem & Plan	■		■			
2. Probability Experiment — Recording & Displaying Results	■		■			
3. Probability Experiment — Long Run Probability	■		■			
4. Chance Investigation: Spin to Win	■		■			
5. Chance Assessment: Spin to Win	■		■			
Assessment Practice						
AS 1.1 Explore data using a statistical enquiry process						
Assessment - Communities and Crime	■					
Assessment - Hipitoitoi simulation	■					
Assessment Template	■					
AS 1.2 Use mathematical methods to explore problems that relate to life in Aotearoa New Zealand or the Pacific						
Assessment - The Hui		■				
Assessment - Ice cream volume		■				
Assessment Template		■				
AS 1.3 Interpret and apply mathematical and statistical information in context						
Practice Assessment			■			
Practice Assessment			■			
Questions by topic			■			
Skills checklist			■			
AS 1.4 Demonstrate mathematical reasoning						
Practice Assessment				■		
Practice Assessment				■		
Skills checklist				■		
Skills practice				■		