



Using Maths Aotearoa and Wilkie Way to deliver the refreshed New Zealand Curriculum

The Maths Aotearoa teacher book 4A continues the sequenced approach to developing key knowledge and concepts. It is organised into units of work each containing a number of chapters. This plan also shows the building blocks from books 3B that may be required for some of the chapters for some of the students on starting Intermediate School. Book 4A provides the steps required to meet the progress outcomes for end of year 8. More practice material for each chapter is available through write on practice workbooks downloaded from the membership area of wilkieway.co.nz All chapters are linked to Figure it Out activities.

Maths Aotearoa available from edify.co.nz

Phase 3: Year 7

Understand: (big ideas)

- Use maths to seek and understand patterns and relationships
- Use maths to work with and make sense of change and variation
- Use maths logic & reasoning to explain relationships and justify conclusions
- Make use of different cultural views and ideas about mathematics
- Embrace the history and evolution of mathematics

Do (practices)

- Students will have learning opportunities to:
- Investigate situations:
 - Represent situations:
 - Connect situations:
 - Generalise findings:
 - Explain and justify findings.

Know: Contexts

Maths Literacy

- Confidently understand and use mathematical specialist vocabulary.
- Confidently read and understand math texts involving words, diagrams and symbols
- Communicate and explain their mathematics using words, diagrams (graphs & tables), equations and expressions
- Increase knowledge of mathematical symbols to include ratios, exponents, positive and negative integers, sigma, brackets, ordered pairs

Concepts being developed

- Addition and multiplication are commutative
- Addition and multiplication are associative
- Subtraction is not commutative
- Subtraction and addition are inverse relationships
- Multiplication as an array, as an allocation or rate, as a multiplicative comparison
- Division is not commutative
- Division and multiplication are inverse relationships
- Fractions as numbers between whole numbers
- The importance of zero to the number system
- Decimals as explicit fractions based on powers of ten

Key knowledge being developed

- Read and write whole numbers & decimals
- Represent whole numbers and decimals using powers of 10
- Recall multiplication & division facts for up to 10×10
- Add and subtract decimal numbers reliably and efficiently
- Multiply fractions and decimals by whole numbers
- Divide whole numbers reliably and efficiently
- Convert between fractions, decimals & percentages
- Use order of operations in solving equations
- Represent linear functions in tables, equations and graphs
- Use step by step procedures (algorithms) to identify, interpret and explain patterns

Maths Aotearoa Book 4A	Maths Aotearoa Book 3B	Maths Aotearoa Book 3A
Unit 1: Working With Whole Numbers	Unit 2: Using the Number System for Addition and Subtraction	Unit 2: Using the Number System for Addition and Subtraction
Chapter 1 Addition and Subtraction <ul style="list-style-type: none"> Select an efficient method for solving addition and subtraction calculations Make sensible estimates and use a calculator efficiently Use and explain a standard written algorithm for addition and subtraction 	Chapter 5 Addition & Subtraction Strategies <ul style="list-style-type: none"> Reliably and efficiently add and subtract multi-digit whole numbers Use a mental method when the numbers lend themselves to using a mental method (e.g \neq 199) 	Chapter 4 Addition <ul style="list-style-type: none"> Extend knowledge of addition strategies for 3 digit numbers Use a standard written (vertical) form for addition of 3 digit numbers Chapter 5 Subtraction <ul style="list-style-type: none"> Expand a standard partition and convert from canonical to non-canonical form Use the non canonical form to understand the vertical algorithm for subtraction Use a standard written (vertical) form for subtraction of 3 digit numbers
Support Material available from Wilkie Way website wilkieWAY.co.nz: membership area (subscription)		
Practice Workbooks 1. (Chapter 1) Addition & Subtraction	Practice Workbooks 11. (Chapter 5) Addition and Subtraction	3A Practice Workbooks 2. (Chapters 4 & 5) Addition & Subtraction
Chapter 2 Multiplication and Division <ul style="list-style-type: none"> Use and apply array thinking to multiplication and division problems Multiply multi digit numbers (using cross product thinking) Use and explain a standard algorithm for multiplication & division 	Unit 3: Extending Multiplicative Thinking Chapter 6 Extending Multiplication <ul style="list-style-type: none"> Use expanded numerals and the distributive property of multiplication to multiply a multi digit number by a single digit Use a standard written recording for multi digit multiplication Chapter 7 Extending Division <ul style="list-style-type: none"> Read and interpret division questions in both recorded formats Recognise division as the inverse of multiplication Explore the division of larger numbers by a single digit Chapter 8 Using Multiples and Factors <ul style="list-style-type: none"> Use terminology multiples and factors Recognise multiples and the closest multiple Identify factors of a given number Use a standard written form for division of a multi digit number by a single digit number. 	Wilkie Way Learning Support - Maths Gym Learning the multiplication & division facts
Support Material available from Wilkie Way website wilkieWAY.co.nz: membership area (subscription)		
4A Practice Workbooks 2. (Chapter 2) Multiplication & Division	3B Practice Workbooks 12. (Chapter 6) Extending Multiplication 13. (Chapters 7 & 8) Extending Division, Multiples and Factors	Learning Support - Maths Gym Learning the multiplication & division facts

Maths Aotearoa Book 4A

Unit 1: Working With Whole Numbers

These two chapters introduce new ideas and mathematical literacy. It is essential that all students have the opportunity for these learning experiences. Some students will need more scaffolding than others.

Chapter 3 Positive and Negative Numbers

- Compare Integers
- Use + and - to mean a direction of movement
- Use and apply positive and negative integers

Chapter 4 Introducing Exponents

- Use the notation of powers to represent repeated multiplication
- Visualise square and cubic numbers

Maths Aotearoa Book 4A

Unit 2: Working with Fractional Numbers

Chapter 5 Fractions, Decimals & Percentages

- Identify a rule for finding a non unit fraction of a quantity
- Use half as a bench mark to order and compare fractions
- Add and subtract fractions
- Convert between fractions, decimals and percentages
- Solve problems involving fractions and percentages

Maths Aotearoa Book 3B

Unit 3: Extending Multiplicative Thinking

Chapter 9 Fractions

- Use correct fraction terminology (*denominator, numerator*)
- Recognise patterns in fraction sequences
- Recognise equivalent fractions
- Understand ratio as comparing fraction parts of the whole

Unit 4: Decimals and Percentages

Chapter 10 Into the Hundredths

- Read, write and represent a two place decimal number
- Give the number one tenth or one hundredth more or less than a given number
- Compare and order up to two place decimal number

Chapter 11 Into the Thousandths

- Read, write and represent a three place decimal number
- Round a three place decimal to the closest whole number, tenth or hundredth
- Use a standard written algorithm to add and subtract decimal numbers (aligning columns correctly)

Chapter 13 Introduction to Percentages

- Understand percentages as specific equivalent fractions
- Know per cent means out of one hundred
- Recall equivalent percentages for half, quarter and three quarters
- Use equivalent fractions to convert a fraction to a percentage
- Use fractions and division to find a percentage of a quantity

Support Material available from Wilkie Way website wilkieway.co.nz: membership area (subscription)

4A Practice Workbooks

3. (Chapter 5) Fractions Decimals and Percentages

3B Practice Workbooks

14. (Chapter 9) Fractions

15. (Chapters 10 & 11) Decimal Fractions

Maths Aotearoa Book 4A	Maths Aotearoa Book 3B
Unit 2: Working with Fractional Numbers	Unit 4: Decimals and Percentages
Chapter 6 Decimal Addition and Subtraction <ul style="list-style-type: none"> Extend known additive strategies to decimal numbers Extend known addition and subtraction algorithms to decimal numbers Estimate solutions to decimal addition and subtraction calculations 	Chapter 12 Solving Problems with Decimals <ul style="list-style-type: none"> Use rounding to make an estimate Use mental methods, standard written methods or estimation and a calculator to solve problems involving decimals
Support Material available from Wilkie Way website wilkieway.co.nz: membership area (subscription)	
4A Practice Workbooks 4. (Chapter 6) Decimal Addition and Subtraction	
Chapter 7 The Base 10 Number System <ul style="list-style-type: none"> Multiply and divide a decimal number by 10 Multiply and divide two digit numbers by decade numbers Express larger numbers using exponents as powers of 10 Chapter 8 Decimal Multiplication and Division <ul style="list-style-type: none"> Apply knowledge of the number system to make reasonable estimates and check the reasonableness of answers Solve more complex problems involving decimal multiplication and division 	Unit 2 Using the Number System for Addition and Subtraction Chapter 3 Larger Numbers <ul style="list-style-type: none"> Read, write, order and compare whole numbers into the millions Give the number 10, 100, 1000 10 000 before and after any given whole number. Give the number of tens or hundreds in a multi digit number Understand the role of zero in writing large numbers in numerals Chapter 4 Using Place Value <ul style="list-style-type: none"> Understand and use the repeated grouping of 10 in the number system (nesting) Use zeros to represent repeated groupings in tens
Support Material available from Wilkie Way website wilkieway.co.nz: membership area (subscription)	
3A Practice Workbooks 5. (Chapter 7) Base 10 Number System	3B Practice Workbooks 10. (Chapter 3 & 4) Whole Number Place Value
Unit 3: Algebra: Understanding and Using Expressions and Equations	Unit 5: Exploring Algebra
Chapter 9 Order of Operations <ul style="list-style-type: none"> Understand how the order of operations affects the value of an expression Solve calculations using the order of operations Determine the order of operations from the context of a problem Create an expression for a multi-step problem using brackets when necessary Chapter 10 Finding the Rule <ul style="list-style-type: none"> Identify a rule and represent the rule using mathematical symbols Understand and use relationship symbols Solve a simple linear equation using inverse operations 	Chapter 14 Using a Calculator <ul style="list-style-type: none"> Consolidate an understanding of equality Focus on relationships between components of an equation Use a letter for a missing part of an equation Chapter 15 Looking for Rules <ul style="list-style-type: none"> Identify rules for sequential patterns Explain the rule for a specific pattern Use a letter to represent an unknown number in a rule
Support Material available from Wilkie Way website wilkieway.co.nz: membership area (subscription)	
4A Practice Workbooks 6. (Chapters 9 & 10) Equations & Expressions	3B Practice Workbooks 16. (Chapters 14 & 15) Exploring Algebra

Maths Aotearoa Book 4A

Unit 3: Algebra: Understanding and Using Expressions and Equations

These two chapters introduce new ideas, mathematical literacy and mathematical tools. It is essential that all students have the opportunity for these learning experiences. Some students will need more scaffolding than others.

Chapter 11 Using Spreadsheets

- Create simple formulae
- Use a spreadsheet to perform simple calculations
- Use a spreadsheet as a problem solving tool
- Use symbol Σ (sigma) from the tool bar to find the sum

Chapter 12 Graphing Rules and Patterns

- Describe relationships between numbers using mapping diagrams and ordered pairs
- Plot ordered pairs as co-ordinates on a grid (graph)
- Use tables and graphs to display and describe a linear relationship

Maths Aotearoa teacher books provide the guidance on how to deliver the content found in the student textbooks.

- **Information to develop and clarify your own conceptual understanding of the mathematics your students are learning.**
- **Making connections with previous work**
- **What manipulatives you could use**
- **Specific explanations required**

The teacher book is deliberately NOT SCRIPTED as I firmly believe the questions you ask should be led the responses your students give you. The questions you ask are dependent on your understanding of the mathematics. As you better understand then the better your questioning will become.

By this level students should have a sound foundational knowledge of mathematics and need to be given plenty of opportunities to use their mathematics in unfamiliar problem solving situations. This will provide opportunities for students to challenge their own thinking about conceptual ideas and learn to explain and justify their thinking. Remember it is making mistakes that create the best learning. Each chapter is linked to Figure it Out activities. (Learning to read the texts is part of the mathematical literacy learning and students may need support.)