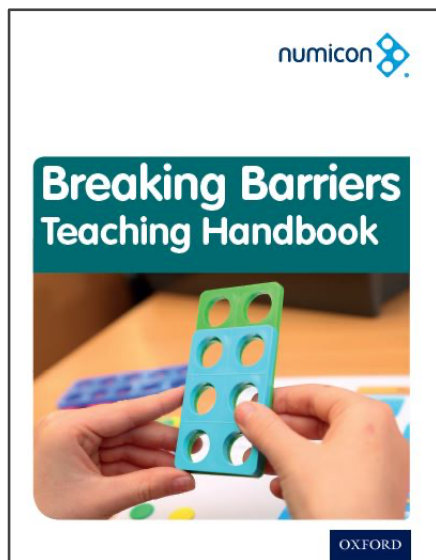


Numicon Breaking Barriers

aligned with the

Expanded New Zealand Curriculum



Phases	1				2			3	
Years	0	1	2	3	4	5	6	7	8
Numicon Books	Firm Foundations	1	2	3	4	5	6	7	8
Junior Intervention			Numicon Intervention Programme						
Senior Acceleration Intervention						Numicon – Big Ideas			
Tier 3 ORS	Breaking Barriers								
	Firm Foundations	1	2	3	4	5	6	7	8

Breaking Barriers, along with Firm Foundations and Numicon 1-3 support the learning at this level



Breaking Barriers provides guidance to teachers to ensure the basic ideas of Number are accessible to children who are experiencing difficulties. There is also guidance on how to address the underlying difficulties that may hinder children's learning.

Firm Foundations builds strong early mathematical understanding through carefully sequenced, practical learning experiences. All Doing Maths Together and Exploring Maths All around us from Firm Foundations provide learning through play and generalising activities. It aligns with Year 0 of the New Zealand Curriculum.

Numicon 1 develops learning at the NZC Year 1 level. Breaking Barriers links to the activities in Geometry, Measurement and Statistics.

Numicon 2 and 3 builds on Year 1 to provide learning at NZC Year 2 and Year 3. Numicon provides a structured progression of learning materials designed to develop early number understanding from foundational concepts through to more complex ideas within the primary years. The progression is cumulative, helping learners consolidate understanding before moving forward.

Firm Foundations and Numicon 1 - 3 are available in hard-copy and digitally via Oxford Owl - Numicon Online NZ (The online version is completely aligned with the NZC)

This document is written in the recommended teaching order – following the Sequence on pages 14 and 15 of the Breaking Barriers Teaching Handbook. It also shows how it aligns with Number in the Expanded NZC. The other strands in the Expanded alignment will be found through the ‘**Extending the Activities**’ section in the Activity Groups.

Three strands of foundation activities to work in parallel

Pattern and Algebra	Counting	Numbers and the Number System
1 Simple repeating patterns	Counting Activity Group	1 Exploring Numicon Shapes and Baseboard
2 Pattern, direction and orientation		2 Matching Numicon Shapes
3 More complex repeating patterns		3 Making comparisons to understand bigger
		4 Making comparisons to understand smaller
		5 Matching Numicon Shapes and pictures
		6 Making comparisons using the language of comparison

Strand and Activity Group Number	Activity Group Title
Pattern and Algebra 4	Similarities and differences – sorting
Numbers and the Number System 7	Learning to order the Numicon Shapes
Numbers and the Number System 8	Securing ordering of Numicon Shapes
Numbers and the Number System 9	Beginning to learn Numicon Shape patterns
Numbers and the Number System 10	Giving the Numicon Shapes their number names
Numbers and the Number System 11	Labelling Numicon Shapes with numerals
Pattern and Algebra 5	Connecting repeating patterns with numbers
Numbers and the Number System 12	Seeing how many from Numicon Shape patterns
Pattern and Algebra 6	Equivalence – amounts and measures
Pattern and Algebra 7	Odd and even
Pattern and Algebra 8	Reasoning about numbers
Calculating 1	Practical adding – starting with the total
Calculating 2	Practical adding – combining to find how many altogether
Calculating 3	Practical adding – adding more
Calculating 4	Practical subtracting – take away
Calculating 5	Practical subtracting – decrease
Calculating 6	Subtracting – comparing numbers to find the difference
Calculating 7	Practical subtracting – comparing numbers to say how many more to equal
Numbers and the Number System 13	Building and naming teen numbers
Numbers and the Number System 14	Teen numbers – notation
Calculating 8	Introducing the ‘+’ symbol
Pattern and Algebra 9	Introducing the ‘<’ and ‘>’ symbols – comparing amounts and measures

Pattern and Algebra 10	Introducing the ‘=’ symbol
Numbers and the Number System 15	Comparing and ordering to 20
Calculating 9	Introducing the ‘-’ symbol
Calculating 10	Adding and subtracting one
Calculating 11	Money – coin equivalence
Calculating 12	Further ideas for developing fluency – adding and subtracting within 10
Numbers and the Number System 16	Finding how many by grouping in tens
Numbers and the Number System 17	Exploring number lines and counting in steps of 10
Numbers and the Number System 18	Structure of 2-digit numbers
Numbers and the Number System 19	Structure of 2-digit numbers – notation
Numbers and the Number System 20	Comparing and ordering 2-digit numbers
Numbers and the Number System 21	Counting in steps of 2 and 5
Calculating 13	Fractions – parts and wholes
Calculating 14	Practical multiplying
Calculating 15	Introducing the ‘x’ symbol
Calculating 16	Practical dividing
Calculating 17	Introducing the ‘÷’ symbol
Calculating 18	Halves and quarters of wholes

Breaking Barriers	Expanded Curriculum
Pattern and Algebra 1: Simple repeating patterns	Number: Number structures Subitising Representations of numerals Bigger and smaller amounts More, less, same Ordinal Numbers Algebra: Equations and relationships Measurement: Size Length Sequencing Geometry: Object awareness Classifying Matching Shapes Pathways
Pattern and Algebra 2: Pattern, direction, orientation	
Pattern and Algebra 3: More complex repeating patterns	
Counting Activity Group	Number: Names, representations, numerals Intentional marks Counting sequence – backwards and forwards Counting amounts one to one Ordinal numbers More, less, subitising Quantities – comparison, increase, decrease Zero Number structures Number operations Sharing, equal sharing Financial Mathematics Geometry: Matching Shapes Pathways Statistics: Developing knowledge from data Visualisation of data Interpretation of data

Number and the Number System 1 Exploring Numicon shapes and the baseboard	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same, Subitising Ordinal Numbers Counting Measurement: Size Length Capacity Weight Time, Routines, Sequencing Geometry: Object awareness Classifying Matching Shapes Statistics: Knowledge of data Visualisation of data
Numbers and the Number System 2 Matching Numicon shapes	
Numbers and the Number System 3 Making comparisons to understand 'bigger'	
Numbers and the Number System 4 Making comparisons to understand 'smaller'	
Numbers and the Number System 5 Matching Numicon shapes and pictures	
Numbers and the Number System 6 Making comparisons using the language of comparison	
Pattern & Algebra 4 Similarities and differences - sorting	Number: Number structures Representations of numerals Bigger and smaller amounts Algebra: More, less, same Equations and relationships Geometry: Object awareness Classifying Matching Shapes
Numbers and the Number System 7 Learning to order the Numicon shapes	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same, Subitising Ordinal Numbers Counting Algebra: Equations and relationships Measurement: Size
Numbers and the Number System 8 Securing ordering of Numicon Shapes	
Numbers and the Number System 9 Beginning to learn Numicon Shape patterns	
Numbers and the Number System 10 Giving the Numicon shapes their number names	

Numbers and the Number System 11 Labelling Numicon Shapes with numerals	Length Capacity Weight Time, Routines, Sequencing Geometry: Object awareness Classifying Matching Shapes Pathways Statistics: Knowledge of data Visualisation of data
Pattern & Algebra 5 Connecting repeating patterns with numbers	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same Algebra: Equations and relationships Measurement: Size Length Sequencing
Numbers and the Number System 12	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same Subitising Ordinal Numbers Counting Algebra: Equations and relationships
Pattern and Algebra 6 Equivalence – amounts and measures	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same, subitising 'Gone' Algebra: Equations and relationships
Pattern and Algebra 7 Odd and even	
Pattern and Algebra 8 Reasoning about numbers	

	Measurement: Size Length Sequencing Capacity
Calculating 1 Practical adding – starting with the total	Number: Number structures Representations of numerals Ordinal Numbers More, less, same, Subitising, gone, different, equal Number Operations Algebra: Equations and relationships Measurement: Size Length Sequencing Capacity Statistics: Knowledge of data Visualisation of data Interpretation of data
Calculating 2 Practical adding – combining to find out how many altogether	
Calculating 3 Practical adding – adding more	
Calculating 4 Practical subtracting – take away	
Calculating 5 Practical Subtracting – decrease	
Calculating 6 Subtracting – comparing numbers to find the difference	
Calculating 7 Practical Subtracting – comparing numbers to say how many more to equal	
Numbers and the Number System 13 Building and naming teen numbers	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same, subitising Counting Algebra Equations and relationships
Numbers and the Number System 14 Teen numbers - notation	
Calculating 8 Introducing the '+' symbol	Number: Number Operations
Pattern & Algebra 9 Introducing the <and > symbols – comparing amounts and measures	Number: Number structures Representations of numerals Bigger and smaller amounts More, less, same Number Operations

Pattern & Algebra 10 Introducing the '=' symbol	Algebra: Equations and relationships Measurement: Size Length Weight Sequencing Capacity Time and routines, sequencing
Numbers and the Number System 15 Comparing and ordering to 20	Number: Number structures Representations of numerals Ordinal Numbers Bigger and smaller amounts More, less, same, subitising Counting
Calculating 8 Introducing the '+' symbol	Number: Number structures Representations of numerals Ordinal Numbers More, less, same, Subitising, gone, different, equal Number Operations Algebra: Equations and relationships Measurement: Size Length Sequencing Capacity Statistics: Knowledge of data Visualisation of data Interpretation of data
Calculating 9 Introducing the '-' symbol	
Calculating 10 Adding and subtracting 1	
Calculating 11 Money – coin equivalence	Number: Number structures Representations of numerals Number Operations Financial Maths and Statistics
Calculating 12 Further ideas for developing fluency – adding and subtracting within 10	Number: Number structures Representations of numerals, zero Number Operations
Numbers and the Number System 16 Finding out how many by grouping in tens	Number: Number structures

Numbers and the Number System 17 Exploring number lines and counting in steps of 10	Representations of numerals Ordinal Numbers Counting
Numbers and the Number System 18 Structure of 2-digit numbers	Bigger and smaller amounts More, less, same, subitising
Numbers and the Number System 19 Structure of 2-digit numbers - notation	Equals, zero Financial Mathematics
Numbers and the Number System 20 Comparing and ordering 2-digit numbers	Measurement: Size Length
Numbers and the Number System 21 Counting in steps of 2 and 5	Weight Sequencing Capacity Time and routines, sequencing
Calculating 13 Fractions – parts and wholes	Number: Number structures Representations of numerals Number Operations Rational Numbers
Calculating 14 Practical Multiplying	Number: Number structures Representations of numerals Number Operations Algebra: Equations and relationships Measurement: Time and routines, sequencing
Calculating 15 Introducing the 'x' symbol	
Calculating 16 Practical Dividing	
Calculating 17 Introducing the '÷' symbol	
Calculating 18 Exploring halves and quarters of wholes	Number: Number structures Representations of numerals Rational Numbers