
New Zealand
Curriculum
Phase 1
Year 2 with
Numicon 1

Numicon is a proven approach to teaching and learning designed to give children the understanding of mathematical ideas and relationships that is essential for successful reasoning and problem-solving. The use of apparatus builds children's mental image of abstract concepts, and helps to develop their understanding of the connections between different areas of mathematics. The resources cover the key mathematical ideas for processes in mathematics: number, measures, shape, space and data that are essential foundations for further mathematical thinking.

We have correlated focus activities from *Number, Pattern and Calculating 2* and *Geometry, Measurement and Statistics 2* to the Mathematics and the New Zealand Curriculum to support teachers in their planning. These correlations will be useful whether schools choose to follow the focus activities in the order outlined in the Teaching Resource Handbook, or prefer to dip in and out of the teaching materials for different topics.

The **Numicon Approach** fulfils the curriculum to students in a knowledge-rich environment where the concepts are taught alongside the processes of being a mathematician. Where you see references to processes, these are embedded in the learning experiences every week:

- The use of representations to communicate with self and others
- Connections within maths and the daily life of the students
- Investigations
- Generalising
- Explain and justify

Included in the Numicon programme is the strong connection with the language of maths. Every week teachers are provided with a list of words and terms to use in their teaching through meaning and usage. There is an expectation that these words are used by the teachers, displayed on walls. Students are encouraged to use these words and terms with confidence. Every week an assessment goal is the 'use of the words and terms in conversation and effectively in discussion'. For example: Numicon 1 Pattern and Algebra 1: Preparing for equivalence and using the '=' symbol

Terms for children to use
more, less, fewer, is greater than, is smaller than, the same, the same amount as, different amount, balances, equals

Teaching Materials Featured in this Correlation:

Number, Pattern and Calculating 1 Teaching Pack ISBN 978-0-19-838940-8
Geometry, Measurement and Statistics 1 Teaching Pack ISBN 978-0-19-838941-5

2024 Curriculum Phase 1 Year 2 with Numicon 1

Abbreviations: Numicon (N) Pattern & Algebra (P&A) Numbers and the Number System, (NNS), Calculating (C), Geometry (G), Measurement (M), Statistics and Probability (*throughout all the strands*) Preparing for Formal Testing (PFT)

Number **Mātauranga tau | Number structure** group objects in a pattern of at least 10 objects, subitise the number of objects in each part, and find the total number in the pattern using the parts	**Securing Foundations 3** **Getting Started** **NNS 2**
• count to 100, • forwards and backwards, • from any number, in 1s, 2s, 5s, and 10s	**Securing Foundations (SF) 3** **SF 4** **SF 11** **NNS 2**
recognise and represent the ten-and-ones structure of the 'teen' numbers 11–19	**SF 6, 7, 9, 10** **NNS 4**
recognise and represent the base ten structure of numbers up to 100	**Securing Foundations (SF) 1, 2, 12** **NNS 1, 2**
compare and order whole numbers up to at least 100	**CAL 2**
partition and regroup whole numbers up to at least 100, using a systematic approach and noticing patterns	**SF 4** **SF 7** **CAL 6** **NNS 5**
use the mathematical processes to: – connect with algebra number patterns and te reo Māori or other languages with an explicit base 10 number structure – generalise the PV structure to compare and order numbers – investigate different ways numbers can be partitioned and recorded – explain and justify the structure of numbers using PV language	**Embedded in the teaching activities above**
Operations use estimation to predict and to check the reasonableness of calculations	**All the way through and particularly from Cal 8 onwards**
identify the nearest tens to any whole number up to 100	**NNS 3**
add and subtract numbers up to 100 without renaming (e.g., 53 + 21; 55 – 32)	**SF 4, 7, 8, 9, 10, 11, 12** **P & A 1**

	CAL 1, 2, 4, 6, 7, 8, 9 **Numicon 2 Calculating**
add and subtract numbers up to 100 without renaming (e.g., 53 + 21; 55 – 32) multiply and divide by grouping and skip counting	**Numicon 2 Calculating** **Firm Foundations Everyday Counting, cards 10 – 13, 18**
multiply and divide by grouping and skip counting use the mathematical processes to: – connect and use addition, subtraction, multiplication, and division in a range of situations – generalise the use of the commutative property when solving addition problems – investigate word problems and identify an operation to use – explain and justify ways of quantifying, including estimation, groupings, and known efficient methods	**Numicon 1 & 2**
Rational Numbers identify, read, write (using symbols and words), and represent halves, thirds and quarters as fractions of sets and regions, using equal parts of the whole	**CAL 5**
Rational Numbers identify, read, write (using symbols and words), and represent halves, thirds and quarters as fractions of sets and regions, using equal parts of the whole directly compare two fractions involving halves, thirds, and quarters	**CAL 5**
find a half, quarter, or third of a set by identifying groups and patterns (rather than sharing by ones)	**CAL 5**
identify, from part of a set or shape, the whole set or shape	**CAL 5**
use the mathematical processes to: – connect a unit fraction of a quantity to division by a denominator – investigate different ways fractions can be represented and partitioned – explain that in a fraction the denominator indicates the number of parts a whole has been divided into, and the numerator the number of fractional parts	
Financial Maths - recognise and order NZ denominations up to $20 according to their value, make groups of 'like' denominations, and calculate their value	**Measurement 2** **CAL 3, 8** **Numicon 2** Knowing NZ denominations to $20
use the mathematical processes to: – connect to place value investigate appropriate financial situations.	
Taurangi | Algebra **Generalising Number Properties** - recall addition facts up to 10, and identify addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves	**P & A 2** Reasoning with numbers **CAL 4**
Taurangi | Algebra **Generalising Number Properties**	**CAL 4**

- recall addition facts up to 10, and identify addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves explore multiplying a number by 0 and 1 and dividing a number by 1	**Numicon 2**
explore multiplying a number by 0 and 1 and dividing a number by 1 explore the commutative property of addition (e.g., 5 + 4 = 4 + 5)	**Numicon 2** **CAL 4, 7, 8**
identify addition facts up to 10 and their corresponding subtraction facts (families of facts), including doubles and halves	**CAL 4, 7, 8**
identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s	**Numicon 2**
use the mathematical processes to: – generalise subtraction problems beyond recalled facts by looking for patterns – investigate patterns using choral counting, materials, the recording of multiples, and the relationships between skip counting and multiplication and division facts	
Equations and Relationships - solve true or false number sentences and open number sentences involving addition and subtraction of 1- and 2-digit numbers, using an understanding of the equal sign (e.g., 18 + _ = 17 + 6; 17 = 25 (T or F?)	True/false
Equations and Relationships - solve true or false number sentences and open number sentences involving addition and subtraction of 1- and 2-digit numbers, using an understanding of the equal sign (e.g., 18 + _ = 17 + 6; 17 = 25 (T or F?) recognise and describe the unit of repeat in a repeating pattern, and use it to predict further elements using the ordinal position	**SF 2, 4, 5, 9, 10, 11, 12** **P &A 1, 2** **CAL 1, 4, 7, 8** **Geometry 2**
use the mathematical processes to: – generalise using the unit of repeat and ordinal position to identify further elements in a pattern – investigate repeating patterns in a range of contexts – explain and justify how a pattern is repeating or growing, and predict future terms in the pattern	**P & A 4 Logic** **P & A 5**
Algorithmic Thinking follow a set of instructions to sort numbers or objects according to a simple rule	**SF 9** **P& A 4 Logic** **NNS 1**
give step-by-step instructions, and identify and correct errors as they are followed	**NNS 1**
use the mathematical processes to investigate appropriate situations.	**CAL 6, 7, 8, 9**
Measurement **Measuring** estimate and use an informal unit repeatedly to measure the length, mass (weight), volume, or capacity of an object	**SF 4** **Measurement 1, 4, 5**
compare and order several objects using informal units of length, mass (weight), volume, or capacity	**Measurement 1, 4, 5**
turn, and describe how far an object or person has turned, using half and quarter turns as benchmarks	**Geometry 5**

use the mathematical processes to: – connect to ordering and comparing numbers – investigate a range of practical measurement situations, including ways of measuring by different cultures – explain and justify, using the same informal unit when measuring	
Perimeter, Area, and Volume visualise, estimate, and measure the perimeter and area of 2D shapes, using informal units	**Numicon 2 Geometry 1**
use the mathematical processes to: – connect with groupings, addition, and known multiplication facts – investigate practical familiar contexts – explain and justify the importance of using the same unit when measuring	
Time - name and order the months and seasons - describe duration using months, weeks, days, and hours - use a calendar to identify the date and to determine the number of days in each month	**Securing Foundations 1, 3** **Pattern and Algebra 2** **Measurement 1**
tell the time to the hour and half-hour, using the language of 'past' and 'o'clock'	**Measurement 1**
use the mathematical processes to: – connect half past, quarter to, and quarter past to fractions; and daily routines and familiar events to days of the week and months of the year – investigate calendars (their days, weeks, and months).	
Geometry **Shapes** identify, describe, and classify the properties of 2D and 3D shapes including ovals, semicircles, polygons (e.g., hexagons, pentagons), rectangular prisms (cuboids), pyramids, hemispheres, and cones, using the properties of shapes	**Geometry 1**
use the mathematical processes to: – connect right angles to square corners in shapes and objects – investigate properties of 2D and 3D shapes, including lines of symmetry – explain and justify the classification of shapes into groups based on their properties	
Spatial Reasoning anticipate which smaller shapes might be used to compose and decompose a target shape, and then check by making the shape	**Geometry 2**
recognise lines of symmetry in patterns or pictures, and create or complete symmetrical pictures or patterns	**Geometry 2**

recognise lines of symmetry in patterns or pictures, and create or complete symmetrical pictures or patterns use the mathematical processes to: – connect quarter, half, and three-quarter turns to fractions – generalise about 2D shapes (e.g., how they can be partitioned into smaller shapes, and how, when orientated in different directions (flip, turn), their properties do not change) – investigate transformation (flip, slide, turn) and lines of symmetry in pictures, patterns, and the environment – explain and justify how shapes have been used to create new shapes	
Pathways follow and give instructions to move people or objects to a different location, using direction, distances (e.g., number of steps), and half and quarter turns	**Geometry 5**
interpret diagrams to describe the positions of objects and places in relation to other objects and places	**Geometry 5**
use the mathematical processes to: – use the mathematical processes to: – connect half and quarter turns with fractions – investigate ways of moving to different locations by following verbal instructions and simple diagrams and maps.	
Statistics **Problem** pose summary investigative questions about a group for which the data will have categorical variables, and anticipate what the data might show (e.g., which outcomes might be more frequent than others)	**CAL 6** • To solve difference problems in a data handling situation. **CAL 8 Activity 3** – creating a table to record
use the statistical processes to: – pose summary investigative questions about a group and for which the data will have categorical variables – investigate an area of interest and things students are curious about	
Plan use survey and data-collection questions to collect data, identify who and what the data measures, and discuss how the data- gathering process might affect other people	
use the statistical processes to: – plan ways of collecting data and survey questions, with support – investigate different survey questions and how they can be interpreted by others	
Data collect categorical data for more than one variable	
collect data using data cards, recording, and tally sheets – investigate different ways of collecting data	
Analysis create and describe data visualisations (e.g., picture graphs, dot plots) for categorical data, comparing the frequencies of categories	

use the statistical processes to: – investigate how different representations (e.g., a picture graph and dot plot) show the same information – explain and justify what a graph shows using 'I notice ...' statements	
Conclusion choose statements that best answer the investigative question	
use the statistical processes to: – connect descriptions with data visualisations and analysis questions with features of the visualisations – investigate ways of reflecting on findings to determine if they make sense with what they already know – explain why some statements answer the investigative question and some do not	
Statistical Literacy match statements made by others with features in simple data visualisations and agree or disagree with the statements.	
use the statistical processes to explain and justify, using agree-with and disagree-with descriptive statements, and suggest ways to improve.	
Probability **Probability Investigations** engage in chance-based investigations about games and everyday situations to: – identifying possible outcomes – collect and record data – create visualisations for frequences of outcomes (e.g. Lists, picture, graphs) - describe what these data visualisations show – answering chance-based investigative questions – notice variations in outcomes (e.g. how often each of the numbers on a dice come up)	**P & A 5** • To look for patterns in finding possibilities • To notice that it is easier to spot patterns when work is organized systematically. This activity group gives children experience of finding more than one possibility systematically. At this stage, not all children will be able to find all possibilities, but they should experience beginning to persevere, a sense of enjoyment in finding out and a chance to be supported in working systematically. The final activity in the group is the most challenging – a first introduction to finding all possibilities using calculations. Not all children may be ready for this.
Critical Thinking in Probability agree or disagree with the statements made by others about chance situations	
use the statistical processes to: – connect relative frequency in words (e.g., two out of three) to fractions (e.g., 2/3) – investigate games of chance and list possible outcomes – use the statistical enquiry cycle (PPDAC) for chance-based investigations – explain, justify, and use the language of probability (impossible, unlikely, possible, likely, certain) and its ordering from impossible to certain.	