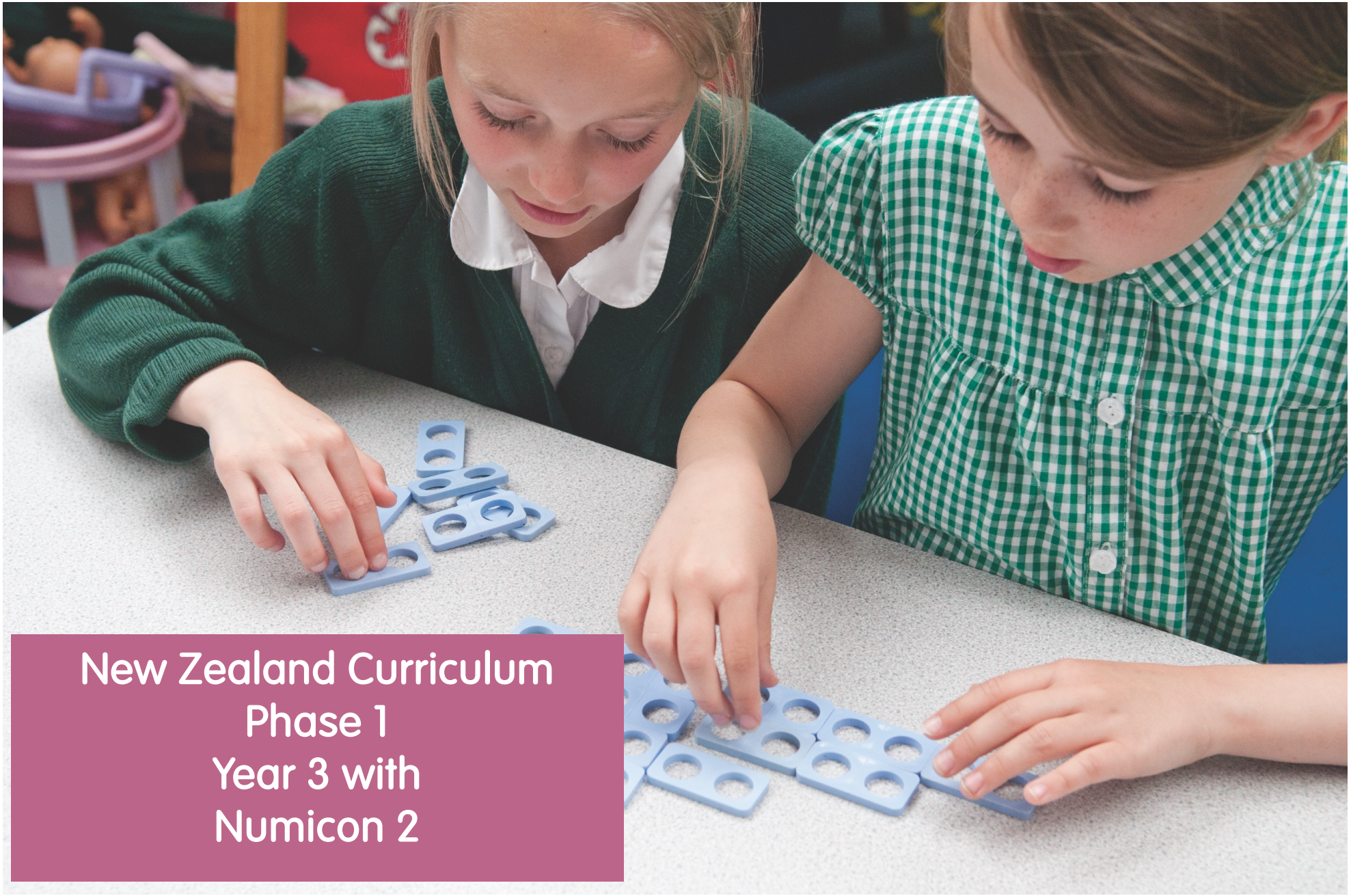

New Zealand Curriculum
Phase 1
Year 3 with
Numicon 2

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 2 Geometry 2: Identifying the faces, edges and vertices of solid 3D shapes
Terms for children to use
face, surface, edge, vertex, vertices, triangle, square, oblong, circle, cube, cuboid, pyramid, sphere, cone, cylinder, straight, curved, round, triangular, circular, left, right, top, middle, bottom, nearer, further, longer, shorter, larger, bigger, smaller

Teaching Materials Featured in this Correlation:

Number, Pattern and Calculating 2 Teaching Pack ISBN 978-0-19-838954-5
Geometry, Measurement and Statistics 2 Teaching Pack ISBN 978-0-19-838955-2
Number, Pattern and Calculating 3 Teaching Pack ISBN 978-0-19-838968-2
Geometry, Measurement and Statistics 3 Teaching Pack ISBN 978-0-19-838969-9

2024 Curriculum Phase 1 Year 3 with Numicon 2

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** estimate to the nearest 10 the number of objects in a collection of less than 100	**Getting Started** **NNS 1**
count to 1,000, forwards and backwards in 1s, 2s, 3s, 5s, 10s, and 100s, from any number	**NNS 1, 2, 4** **P & A 5** **Cal 8**
	NNS 1 - 1000
recognise and represent the base ten structure of numbers up to 1,000	**NNS 2, 3, 4, 5** **CAL 4**
	NNS 2 - 1000
identify, read, and write whole numbers up to at least 1,000	**NNS 2, 5**
	NNS 2 - 1000
compare and order whole numbers up to at least 1,000	**NNS 3, 4, 5**
	NNS 1 - 1000
partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patterns	**CAL 4, 6**
	NNS 4 - 1000
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	**The mathematical processes listed (see left) are embedded in the activities above and for all sections described below, to the end of the document.**
Operations use estimation to predict and to check the reasonableness of calculations	**CAL 1, 2, 3, 4, 7, 11, 12, 13, 14**
round whole numbers up to 1,000 to the nearest hundreds and tens	**NNS 5**

	NNS 6
add and subtract 2- and 3-digit numbers without renaming and without a change-unknown (e.g., 148 – 23; 235 + 121)	**CAL 1, 2, 3, 4, 7, 10, 11, 12, 13, 14**
	CAL 9 11, 12, 13, 14
multiply a 1- or 2-digit number by a 1-digit number, without renaming (e.g., 4 × 6; 2 × 23)	**CAL 8, 9, 11, 15** **P & A 5** **Measurement 2**
divide whole numbers by a 1-digit divisor with no remainders, by grouping and using the inverse relationship with multiplication (e.g., 32 ÷ 4)	**CAL 15**
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	**The mathematical processes listed (see left) are embedded in the activities above and for all sections described below, to the end of the document.**
Rational Number identify, read, write, and represent halves, thirds, quarters, fifths, sixths, and eighths as fractions of sets and regions, using equal parts of the whole	**CAL 16** **NNS 6**
	Numicon 3 - eighths **Numicon 4** - fifths and sixths
compare and order fractions involving halves, quarters, and eighths and identify when two fractions are equivalent	**NNS 6**
find a unit fraction of a whole (e.g., 1/3 of 15)	**NNS 6** **CAL 15**
identify, from a unit fraction part of a set or amount, the whole set or amount	**Numicon 1 CAL 5**
	Numicon 2 CAL 15
	Numicon 3 NNS 8 **CAL 7, 11**
add unit fractions with the same denominator (e.g., 1/8 + 1/8 + 1/8 = 3/8)	**Numicon 3 NNS 7**
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	**The mathematical processes listed (see left) are embedded in the activities above and for all sections described below, to the end of the document.**
Financial Maths make amounts of money using one- and two-dollar coins and 5-, 10-, 20-, 50-, and 100-dollar notes	**CAL 4, 15** **P & A 5**

	Measurement 2, 3
use the mathematical processes to: – connect to addition and subtraction when calculating amounts – investigate appropriate financial situations.	
Taurangi | Algebra **Generalising Number Properties** recall addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves	**Getting Started** **CAL 5, 10, 11**
explore dividing a number by itself, and why we cannot divide by 0 (e.g., by trying to solve 0 × _ = 5)	**CAL 15** **P & A 5**
• use the additive identity • multiplicative identity • commutative property	**P & A 1, 2, 3, 5**
recall multiplication and corresponding division facts for 2s, 3s, 5s, and 10s	**CAL 9** **P & A 3**
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 • open number sentences involving addition and subtraction, • using an understanding of the equal sign	Solve true or false number sentences **LOOK for this** **P & A 1, 3, 7** **CAL 1, 14** **Measurement 6**
recognise and describe the rule for a growing pattern and describe a rule to explain a pattern	**P & A 4**
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	
Algorithmic Thinking follow, and create patterns from, rules or simple algorithms	**CAL 14**
formulate a familiar routine or basic task as a set of precise, step-by-step instructions (i.e., an algorithm)	**P & A 4** **Cal 14**
use the mathematical processes to investigate appropriate situations.	
Measurement **Measuring** estimate and then reliably measure length, capacity, and mass (weight), using metric units (e.g., from tools with labelled markings)	**Measurement 1, 4, 5, 6**
compare and order objects using metric units of length, mass (weight), or capacity	**Measurement 1, 4, 5, 6**

turn, and describe how far an object or person has turned, using half, quarter, and three-quarter turns as benchmarks	**Geometry 5**
use the mathematical processes to: connect to base 10 place value, ordering and comparing numbers – investigate a range of practical measurement situations, including ways of measuring by different cultures – explain and justify, using the labelled markings on tools	
Perimeter, Area, and Volume visualise, estimate, and measure: – the perimeter of polygons using metric units – the area of 2D shapes covered with squares of identical size – the volume of rectangular prisms (cuboids) by filling them with identical units	**Numicon 1 Geometry 2** **Numicon 2 Geometry 4**
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 use a calendar to work out the number of days, weeks, or months until important events	**Numicon 1 Measurement 3** **P & A 1** **Measurement 7**
tell the time to the hour, half hour, and quarter past and quarter to the hour	**Measurement 7**
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** visualise, identify, compare, and classify 2D and 3D shapes using the properties of shapes including lines of symmetry	**Geometry 1, 2, 3, 4, 5** **P & A 4**
identify right angles in shapes and objects	**Geometry 5**
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 compose and decompose 2D shapes using the properties of shapes (e.g., lines of symmetry), other shapes, side lengths, and angles	**Geometry 1, 2, 3, 4**
predict the result of a one-step transformation on 2D shapes	**Geometry 1**
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 create a sequence of step-by-step instructions (an algorithm) for moving people or objects to a different location	**Numicon 1 Geometry 5** **Numicon 3 Geometry 2, 4**
interpret, draw, and use simple maps to locate objects and places relative to other objects and places	**Numicon 1 Geometry 5** **Numicon 3 Geometry, 4**
use the mathematical processes to: – connect quarter, half, and three-quarter turns to fractions – investigate ways of moving to different locations by following verbal instructions and simple diagrams and maps.	**Numicon 1 Geometry 5** **Numicon 3 Geometry 2, 4**
Statistics **Problem** pose summary investigative questions about everyday situations, using categorical data and discrete numerical (whole number) data, including about identifying the variable and the group of interest, and anticipate what the data might show	**Measurement 1, 2, 3, 4** **Geometry 2, 4** **P & A 6**
use the statistical processes to: – pose an investigative question with support – 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	**Measurement 1, 2, 3, 4** **Geometry 2, 4** **P & A 6**
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, record, and sort data, or use secondary data sources provided by someone else	**Measurement 1, 2, 3, 4** **Geometry 2, 4** **P & A 6**
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, bar graphs) for categorical and discrete numerical data	**Measurement 1, 2, 3, 4** **Geometry 2, 4** **P & A 6**
use the statistical processes to: – investigate appropriate situations – explain and justify using 'I notice' statement about data visualisations, selecting the visualisation that best represents the data	
Conclusion choose statements that best answer the investigative question, reflect on findings, and compare them with anticipated outcomes	**Measurement 1, 2, 3, 4** **Geometry 2, 4** **P & A 6**

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 identify relevant features in others' data visualisations, connect these to descriptive statements, agree or disagree with the statements, and suggest improvements	**Measurement 1, 2, 3, 4** **Geometry 2, 4** **P & A 6**
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 with equal likely outcomes, by: – anticipating what might happen – identifying possible outcomes – creating data visualisations for possible outcomes – describing what these visualisations show – answering investigative questions – reflecting on anticipated outcomes - notice variations in outcomes	**P & A 6, 7**
Critical Thinking in Probability explain and question statements about chance-based situations, with reference to data	**P & A 6, 7**
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.	TWO OF THE THREE – clearer language