## numicon

## Making Maths Real

Growing learners to love Maths


OXFORD


## What are schools looking for?

- To improve the experience of learning for the students becoming engaged and LOVING Maths
- To improve the experience of teaching
- Lift students' results
- Enrich the interconnectedness of Maths



## Why Numicon?

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- Builds understanding and develops fluency by using a visual, practical base to develop conceptual understanding and fluent recall
- Develops confidence. Children solve problems in everyday life contexts through using structured concrete materials
- Enjoyment! All children are engaged and love maths!


## Why Numicon?

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- Provides a balanced coverage of all Strands in the New

Zealand Curriculum in a structured, interconnected and progressive approach for the whole school.

- Assessment based on a formative approach with 'student voice'
- Exciting progress of all our students in every school. No gaps in the learning with Numicon!
- IT MAKES SENSE!


Flexible learning activities giving teachers and students confidence together



## Why Numicon?

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Connections in mathematics


- Learning through exploration/play
- Inquiry learning
- Problem-solving
- Structured, explicit teaching

Number sense


## Operations




## Fractions



## A whole school approach

## NZC NUMICON TABLE

| NZC Level | 1 |  | 2 |  | 3 |  | 4 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | 0/1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| NP Stages (Approx.) | 0-3 | 4 | Early 5 | Late 5 | 6 | 7 | 8 |  |
| Numicon | FF | 1 | 2 | 3 | 4 | 5 | 6 |  |
| Intervention | Numicon Intervention Programme |  |  |  |  |  |  |  |
| Learning Needs | Breaking Barriers |  |  |  |  |  |  |  |
| Acceleration | Big Ideas - Suitable for students in Years 5-9 as a catch-up |  |  |  |  |  |  |  |

Creating consistency and inclusion for the students in their learning

- Professional Learning Support from one year to one hour...
- Free support through numicon.co.nz

Contact us at admin@Edushop.nz

## Teaching and Assessment everything is provided for you!

Number, Pattern,
Calculating


Student problem-


Geometry, Measurement, Statistics

solving activities, going deeper

## Numicon Online <br> and Firm Foundations Online

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- Editable long, medium and short term planning documents
- Informative and directive Implementation videos
- Online Teaching Handbooks
- Teacher support videos
- Classroom display supports
- Planning and Assessment
- IWB/computer software
- Activity supports


## Numicon Apparatus



And using what you already have!

## A year's sequence building confidence

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## Weekly planning provided - EASY!

## Calculating 4: Exploring adding and subtracting facts to 10

Key mathematical ideas Adding, Subtracting, Pattern, Inverse, Mathematical thinking and reasoning

## Educational context

As they work on this activity group, children make some important steps towards developing fluency. The activities begin by looking at zero when adding and subtracting so children experience that, if zero is added or subtracted, it just leaves everything as it was. The
activities move on to exploring the adding and subtracting facts for all numbers to 10 (in random order, since numbers do not come up in order in everyday life). At this stage, the emphasis is very much on exploring and making discoveries, rather than finding all combinations for any number independently. However through exploring and organizing adding facts and relating adding to subtracting, children will start to build a repertoire of known facts. In all the activities, children are encouraged to notice the triadic (three-way) associations between numbers (e.g. $4+2=6,6-2=4,6$ $-4=2$ ) and to explain these relationships in their own way. This provides opportunities for them to begin to notice the inverse relationship between adding and subtracting, although at this stage it is not taught explicitly. The activities continue with revising doubling numbers 1-5 and how knowing 'double facts' can help with related calculations. Near doubles are also explored. Children should always be encouraged to make up their own number stories relating to the problems. The activities will provide assessment opportunities related to perseverance, understanding and systematic ways of working, as well as the extent to which children are able to recall known facts.
As these facts are such an important foundation for children's ongoing calculating, the whole-class focus on each number may last several days; and numbers may be revisited for those children who are insecure. There are limited independent practice suggestions as we recommend giving children practice for each number using the ideas from another number, especially those using the Pan Balance, the Post Box and the Parts and Wholes photocopy master. Exploring all the numbers with both number rods and Numicon Shapes gives further important practice.

## Learning opportunities

- To understand what happens when zero is added or subtracted. - To become fluent with adding and subtracting facts for numbers to 10 and to recognize that these can be useful in many different situations.
- To recall doubles of numbers 1-5 and recognize that these can be useful when faced with related calculations.
- To experience situations when it is useful to use adding and subtracting facts for numbers to 10 .
- To know when to look for patterns and that it is easier to spot them when work is organized systematically.
- To begin to see when to use the inverse relationship between adding and subtracting to solve problems.


## Words and terms for use in conversation

combine, add, plus, total, compare, subtract, take away, minus, difference, equals, facts, pattern, similar, different, combination, organize, systematic, how many ways?

## Assessment opportunities

Look and listen for children who:

- Use the above words and terms effectively in discussion.
- Understand what happens when zero is added or
subtracted.
- Recognize when it is important to be well-organized and to work systematically, e.g. those who show adding facts in order, with or without structured apparatus.
- Are beginning to have fluent recall of adding and subtracting facts to 10 and who know when to use these to help when adding and subtracting.
- Have fluent recall of doubles totalling no more than 10 and use them to help when adding and subtracting adjacent numbers. - Are beginning to recognize that there is a relationship between adding and subtracting facts that can be helpful when solving mathematical problems.


## Explorer Progress Book 1b, pp. 16-17 <br> Explore More Copymaster 25: Winning Row

## Focus activities

1. Adding with zero
2. Subtracting with zero
Exploring 7 - finding adding facts
Exploring 7 - finding subtracting facts
Exploring 3 - finding adding facts
Exploring 3 - finding subtracting facts
Exploring 10 - finding adding facts
Exploring 10 - finding subtracting facts
Double the amount
Relationships between adjacent numbers

## NZCO Number and Algebra

## Number Strategies

Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.
Number Knowledge
Know the forward and backward counting sequences of whole numbers to 100.
Know groupings with five, within ten, and with ten.
Equations and Expressions
Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Patterns and Relationships
Generalise that the next counting number gives the result of adding one object to a set and that counting the number of objects in a set tells how many. Create and continue sequential patterns.

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## Assessment built in - EASY!





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There's no magic in the plastic, it's what you do with it that counts!

Purchase Numicon Resources including Numicon Online at


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