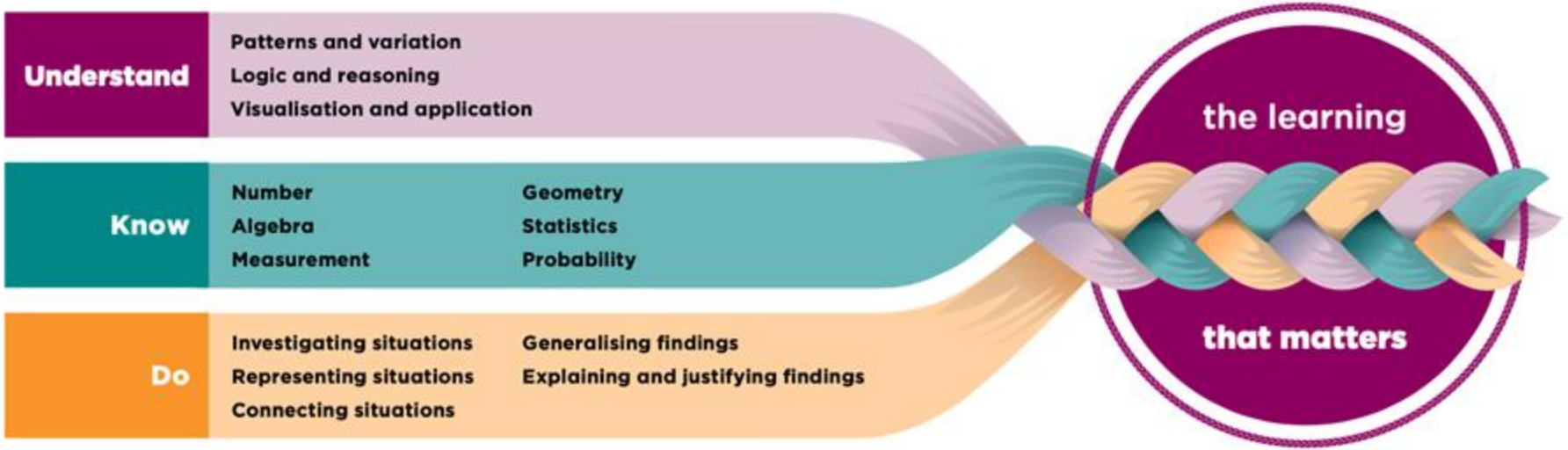
Numicon and new Maths curriculum…



https://files-au-prod.cms.commerce.dynamics.com/cms/api/qwxsnqcpfm/binary/ML70rC

Purpose Statement

In mathematics and statistics …

- Students learn to investigate, interpret, and explain patterns and relationships in quantity, space, time, data, and uncertainty.
- Mathematics and statistics often serve as a universal language. Students participate when they engage in discussions about their maths thinking and the thinking of others.
- Students develop fluency and mastery in maths, which leads to pathways into a wide range of industries that rely on maths knowledge and reasoning.
- The learning area supports the use of specific vocabulary and symbols and the understanding of tables, graphs, and diagrams.

Numicon says maths is:

'A great big ***conversation*** *about* ***relationships*** *between* ***quantities, events and things themselves****. We have invented numbers and measures of many kinds to help develop our mathematical communicating.*

Mathematical communicating *involves a great deal* ***more than words****.* ***Actions, gestures, drawings, diagrams, pictures and symbols*** *are included.'* *Firm Foundations*

Purpose Statement

The learning area embodies a structured approach to mathematics that encompasses:

- a clearly sequenced year-by-year curriculum
- a progressive and cumulative approach to the acquisition of knowledge, skills, and competencies in order to build student mastery
- teaching guidance on effective practice

Science of Learning

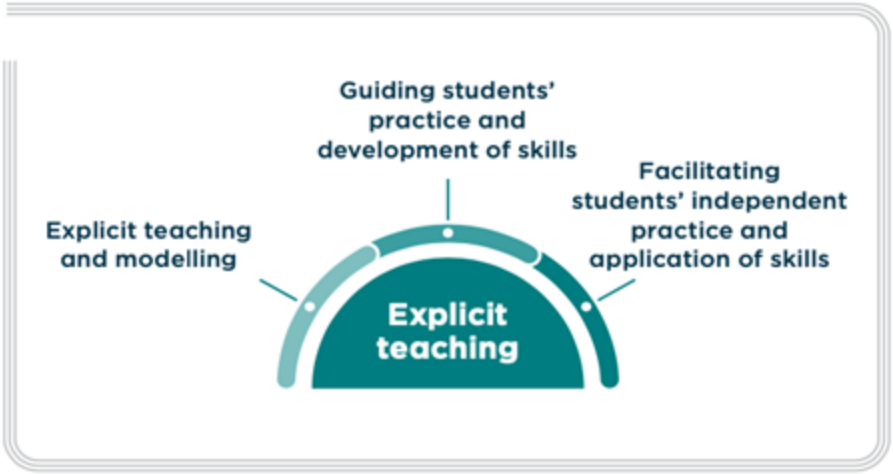
The science of learning provides insights into how to sequentially structure teaching and learning programmes to ensure progressive **mastery** of maths concepts. It also provides pedagogical principles that support student learning in maths.

- Cumulative - each concept builds on others that have already been learned
- Combines both conceptual and procedural knowledge
- Steps broken down into small accessible steps to reduce cognitive load
- Pedagogical principles to support learning - CPA
- Apply knowledge of concepts and procedures to new situations
- Flexible grouping
- Explicit teaching of concepts and language
- Assessment - formative

Teaching Guidance

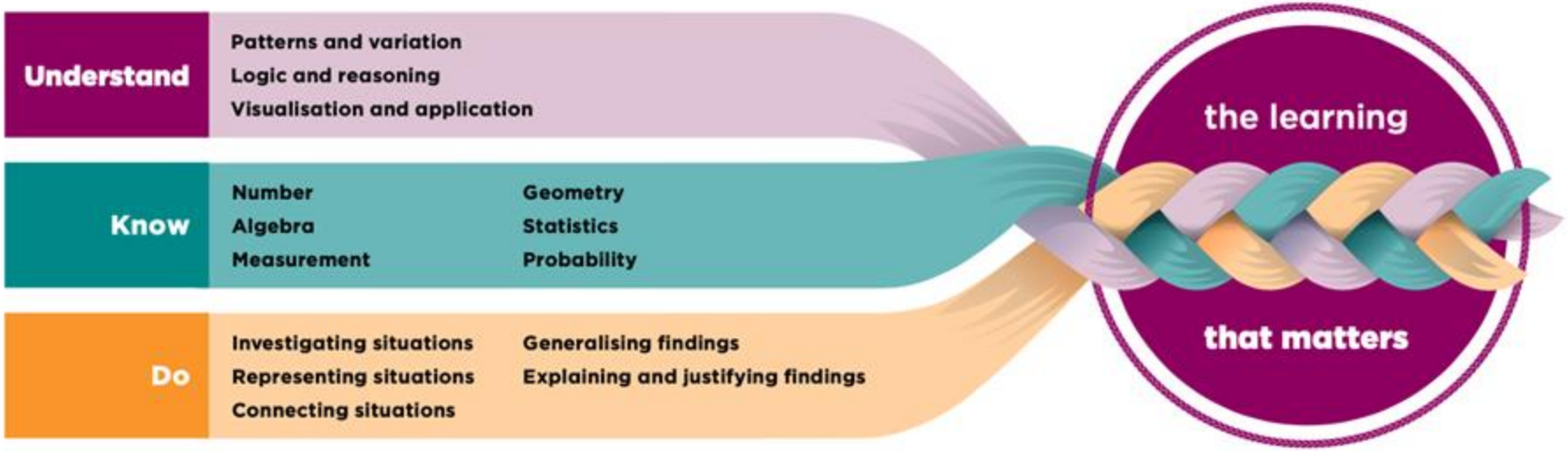
A comprehensive mathematics and statistics programme has the following elements:

1. Positive relationship with maths
2. Maths Mastery and a structured approach to teaching and learning
3. Effective use of technology
4. Explicit teaching



- **All** students can learn mathematics
- **Conceptual understanding** *small accessible steps that build one upon the other. Low floor, high ceiling*
- **Cyclic -** students revisit and embed maths learning
- **Depth** - is valued over acceleration with rich tasks to practise apply mathematical understanding
- **Vocabulary** - the language of maths is explicitly taught
- **Flexible** grouping.
- **C.P.A-** Concrete, pictorial, abstract
- Students **make connections** and **build relationships.**
- Students **communicate** their **mathematical thinking** to **solve problems** effectively.

Understand helps connect school maths with the wider world and identifies critical learning in maths. Understand comes alive as students engage in the practices of ‘Do’ to learn the knowledge embedded in ‘Know’.



‘Know’

Broken down into six strands that represent the key learning in maths:
number, algebra, measurement, geometry, statistics, and probability.

Numicon:

- NNS
- P & A
- Calculating
- Measurement
- Geometry
- Statistics – embedded throughout

Calculating	13
Calculating	14
Measurement	1
Pattern and Algebra	5
Geometry	4
Numbers and the Number System	7
Numbers and the Number System	8
Measurement	2

‘Do’ - *‘Doing’ maths*

These processes are central to how students learn and apply maths knowledge.

- Representing situations
- Connecting situations
- Working systematically
- Explaining and justifying situations
- Investigating situations
- Generalising situations