Progressions of Measurement and Space (Geometry) through NZC Phases 1 – 3 aligned with Numicon

Phase 1				
Must achieve during first 6 months	Must achieve during first year	Must achieve during second year	Progress outcomes by the end of the third year	Numicon
Ine | Measurement • compare directly two objects by an attribute (e.g., length, weight, capacity)	• compare the length, weight, volume, and capacity of objects indirectly (i.e., by comparing each of them with another object)	• use a standard informal unit repeatedly to measure the length, weight, volume, or capacity of an object	I know that: Measuring starts at the beginning of the object being measured. The size of the measurement unit must remain the same. Measurement units are repeated with no gaps or overlaps. The measurement is the total number of units used. Length around the outside of a two-dimensional shape gives perimeter, covering a surface gives area, and filling a three-dimensional shape gives capacity or volume. I know how to: • estimate and then reliably measure length, area, volume, capacity, and mass, using standard metric units • use rulers, scales, square grids, and cubes to measure • tell the time to hours, half hours, and quarter past or quarter to the hour, using language and a range of cultural tools, including analogue and digital clocks • find out how far something has been turned, using half and quarter turns as benchmarks.	Firm Foundations Numicon 1 Numicon 2
Mokowā | Space • sort shapes and objects by one feature (e.g., colour,	• sort and re-sort shapes and objects by features, identifying the feature chosen	• visualise and anticipate which smaller shapes might compose or decompose a target shape,	I know that: Patterns and regularities in shapes can be used to compare, classify, and predict.	Firm Foundations

shape), identifying the feature chosen • compose by trial and error an outlined target shape using smaller shapes, and decompose a shape into smaller shapes • follow instructions to move to a familiar location or locate an object.	• visualise and anticipate which smaller shapes might compose a target shape, and then check by making the shape • follow and give instructions to move to a familiar location or locate an object.	and then check by making the shape • follow and give movement instructions that involve familiar reference points, direction, distances (number of steps), and half and quarter turns	Two-dimensional shapes can be composed or decomposed to form new shapes and can have symmetry. Shapes and objects can flip (reflection), turn (rotation), and slide (translation) and be used to create patterns. Objects can be rotated in space and may appear different from other perspectives. Maps are two-dimensional representations of places in the world. They use symbols to show locations and landmarks. I know how to: • visualise, identify, compare, and classify two- and three- dimensional shapes • compose and decompose two-dimensional shapes using the properties of shapes, such as lines of symmetry • predict and justify what will happen to two-dimensional shapes if you rotate, reflect, or translate them • use pepeha to describe location by referring to environmental features • draw simple maps of familiar places to provide directions • interpret simple maps to locate objects and pathways.	Numicon 1 Numicon 2

Phase 2			
Must achieve during Year 4	Must achieve during Year 5	Progress outcomes by the end of Year 6	Numicon
Ine | Measurement		Mātauranga Māori draws on knowledge of te taiao and has meaningful ways of measuring things (e.g., Maramataka). The metric measurement system is based on powers of ten.	Numicon 3 Numicon 4

		Measurements can contain units and parts of units, and need the unit recorded with the amount (e.g., 1.3 km). Angles are a measure of turn and can be measured in degrees. I know how to: • read measurement tools and interpret scales accurately • convert between units of time and solve duration-of-time problems • find the perimeter and area of rectangles and the volume of cuboids • describe an angle using the benchmarks 90 degrees, 180 degrees, and 360 degrees.	Numicon 5
Mokowā | Space • identify which shape is a reflection, rotation, or translation of a given shape	• visualise and draw nets for a cube	Two- and three-dimensional shapes have consistent properties that can be used to define, compare, classify, predict, and identify relationships between them. Shapes can be rotated, reflected, translated, and resized. Viewing objects from different angles gives different perspectives. Mātauranga Māori often identifies location in the natural world as a form of mapping (e.g., for travelling). Position can be described using known environmental features and signs from te taiao. Maps use grid references or coordinates to specify places, scales to show distances, and connections to show pathways. I know how to: • classify two-dimensional shapes and prisms using their spatial properties to justify my classifications	Numicon 3 Numicon 4 Numicon 5

		• perform and describe rotations, reflections, translations, enlargements, and reductions on two-dimensional shapes and simple geometric patterns • visualise and represent three-dimensional shapes from different viewpoints • visualise and draw nets for rectangular prisms • use grid references, simple scales, the language of direction (compass points), distance (in m, km), and turn (in degrees) to locate and describe positions and pathways.	
Phase 3			
Progress outcomes by the end of Year 8			Numicon
Ine | Measurement I know that: • In the metric system, there are base measurements with prefixes added to show the size of units. Metric measurements can be converted from fractions to whole numbers, and vice versa, by changing units. Shapes can be decomposed or recomposed to help us find perimeters, areas, and volumes. When two line segments meet, they form an angle, which can be thought of as a rotation of one of the line segments. I know how to: • estimate and then measure length, area, volume, capacity, mass, temperature, data storage, time, and angle, using appropriate metric units • convert between measurement units • read analogue and digital measurement tools, round appropriately, and interpret scales accurately • find the perimeter and area of parallelograms and shapes composed of rectangles • read, interpret, and use timetables and charts that present measurement information.			Numicon 5 Numicon 6
Mokowā | Space Spatial properties of simple polygons and polyhedra can also apply to more complex two- and three-dimensional shapes. Three-dimensional shapes can be represented by two- dimensional images.			Numicon 5

The invariant properties of two- and three-dimensional shapes do not change under different transformations. Position, direction, and pathways can be described using te taiao, as in Māori and Pacific systems of knowledge, or using scale, compass points, and environmental features. Coordinate systems and maps can express position, direction, and pathways. I know how to: • classify shapes based on their properties • visualise and draw nets for prisms that have a fixed cross section • use plan-view drawings to visualise and construct three- dimensional shapes • find unknown angles and identify angle properties of intersecting lines • make combinations of transformations that use the invariant properties of shapes • use scale, compass points, and coordinate systems to interpret and describe distance, location, and direction.	Numicon 6