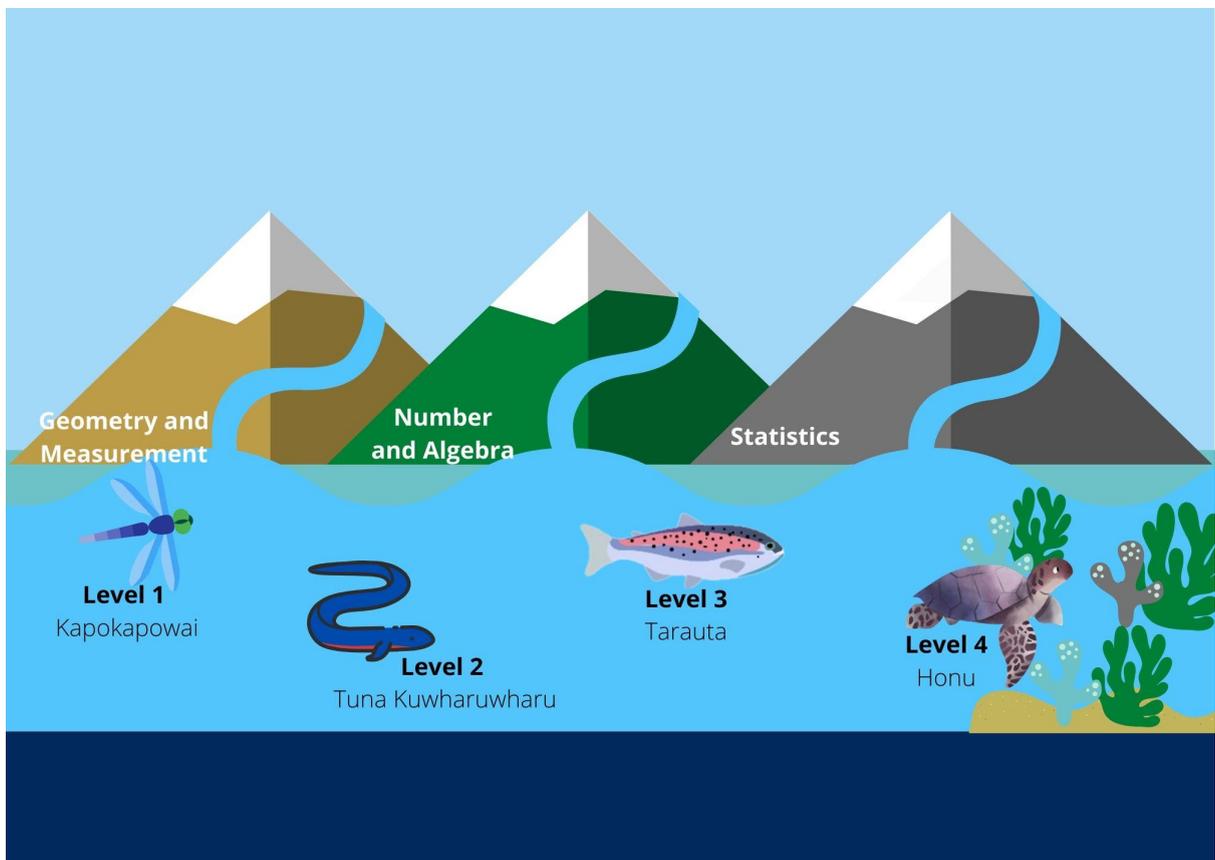
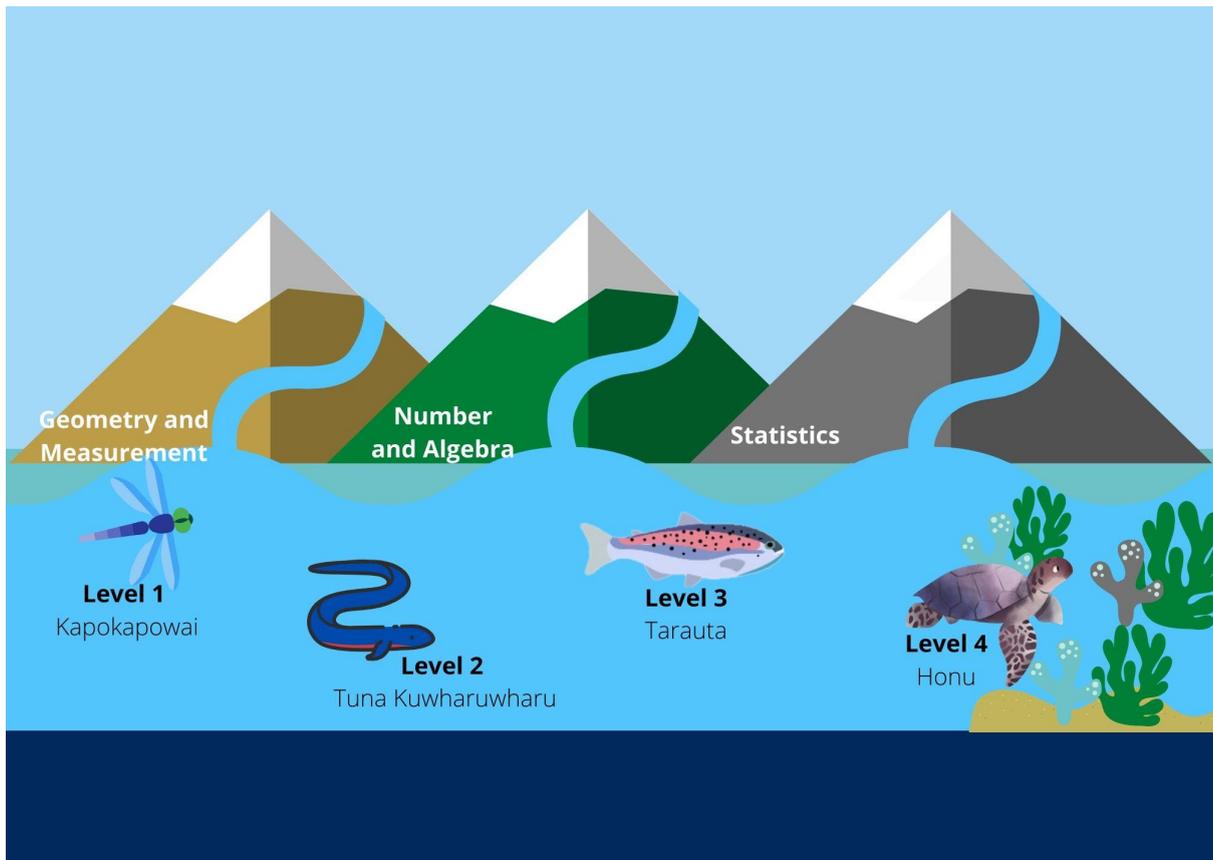


Blockhouse Bay Primary School
Mathematical
Behaviours
(what mathematicians do)



BHB Mathematical Behaviours

Levels 1-4



The icons representing each level

Level One *Kapokapowai*

Children at level one are dipping their toes (wings) in the awa. Gathering information from the streams and the awa

Level Two *Tuna Kuwharuwharu*

The tuna lives in the streams and is beginning to gather more knowledge and skills and makes visits to the awa to develop the dispositions

Level Three *Tarauta* (Rainbow Trout)

The trout lives in the awa. It has well developed skills and knowledge and is developing the dispositions at a deeper level

Level Four *Honu*

The turtle is swimming in the moana but occasionally needs to come to land-is not fully moana dwelling

Explanation of the visuals for Mathematic pathways

The three maunga represent the three learning areas in the Mathematics and Statistics Curriculum and the knowledge and skills the students need in each area.

The green one in the middle represents Number and Algebra, the grey one on the right represents Statistics and the tan one on the left represents Geometry and Measurement. The relative sizes of the maunga change.

At Level One 60-80% of time is spent on Number and Algebra



At Level Two the curriculum still suggests 60-80% is spent on Number and Algebra



By Level Three the time spent on N & A has reduced to between 50-70%



And by Level Four it is 40-60%

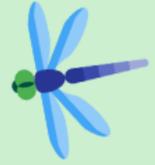


The awa is the mathematical dispositions that the children need to develop to be successful in Mathematics. The streams (kuinga) come down from the mountain, run into the awa and all flow together into the moana. Where all the skills, knowledge and dispositions combine to make flexible, confident mathematicians.

Level One *Kapokapowai*

Mathematical Behaviours (what mathematicians do)

I am learning to....



Sense making



Make **sense of problems** and think about how to solve them



Use materials in a **creative** way to manipulate and **discover** through play and make sense



Understand and use mathematical vocabulary



Use **strategies** to solve a problem

Explaining, reasoning and questioning



Explain my mathematical thinking by talking, drawing or by using materials



Explain others' strategies by **repeating** or **re-voicing** what they have said in your own words



Provide mathematical reasons to agree or disagree with someone else's strategy or answer, and **explain** why you think this



Growth mindset



Take **risks** and know that I can learn from making **mistakes** e.g. I know that counting on from the largest number is easier than counting from 1



Level Two *Tuna Kuwharuwharu*



Mathematical Behaviours (what mathematicians do)

I am learning to...

Sense making



Make sense of problems and **persevere** in solving them



Select the most **efficient** strategy to solve a problem e.g I know that for this problem using a place value strategy is more efficient than counting on



Make **connections**

- between different ways of solving problems, the big ideas and my understanding
- between mathematical representations and topics
- between mathematics and everyday experiences



Understand and use mathematical vocabulary

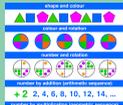


Use manipulatives/materials to support my sense making, mathematical thinking and **reasoning**

Explaining, reasoning and questioning



Explain my mathematical thinking orally, visually, with materials, in writing and using digital tools



Use symbols, graphs and diagrams to find and communicate **patterns** and **relationships**



Use questions that challenge an explanation mathematically and draw justification

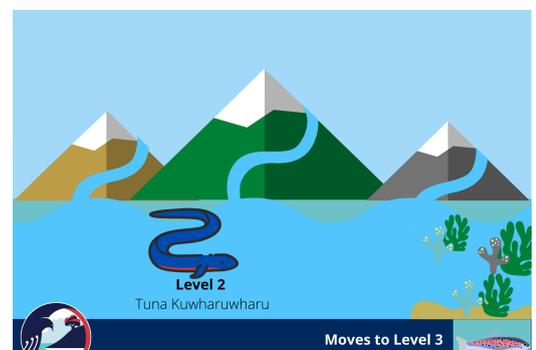
Growth mindset



Think **creatively** about how to solve an unfamiliar problem



Take **risks** and know that I can learn from making **mistakes** (share ideas even if I know that they are wrong)



Level Three *Tarauta*



Mathematical Behaviours (what mathematicians do)

I am learning to....

Sense making



Make sense of problems and **persevere** in solving them



Select the most **efficient** strategy to solve a problem e.g I know when to use doubling and halving, rounding and compensating or reversibility



Make **connections**

- between different ways of solving problems, the big ideas and my understanding
- between mathematical representations and topics
- and between mathematics and everyday experiences



Understand and use mathematical vocabulary



To use manipulatives/materials to support my sense making, mathematical thinking and **reasoning**

Explaining, reasoning and questioning



Explain my mathematical thinking orally, visually, with materials, in writing and using digital tools



To convince, reason and be **skeptical** (make conjectures, prove and justify and verify to seek patterns and make **generalisations**)



Ask **questions** to gain more understanding about an explanation



Use symbols, graphs and diagrams to find and communicate **patterns** and relationships

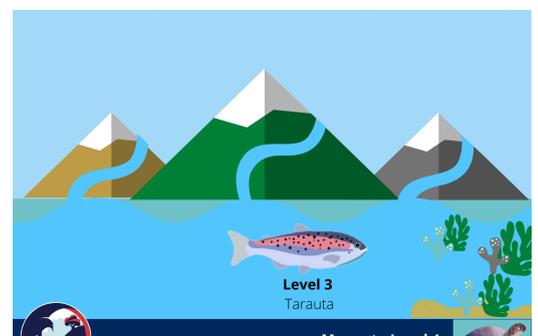
Growth mindset



Think **creatively** about how to solve an unfamiliar problem



Take risks and know that I can learn from making **mistakes**



Level Four *Honu*



Mathematical Behaviours (what mathematicians do)

I am learning to....



Make sense of problems and **persevere** in solving them, sometimes over many days



Apply the most **efficient** strategy to solve a problem e.g. I know that for this problem a part-whole place value strategy is more efficient than compensating from tidy numbers.

Sense making



Make **connections**

- between different ways of solving problems, the big ideas and my understanding
- between mathematical representations and topics and
- between mathematics and, daily life, current events, art, culture or sport



Understand and use complex mathematical vocabulary



Use manipulatives/materials to support my sense making, mathematical thinking and reasoning



Clearly explain my mathematical thinking orally, visually, with materials, in writing and using digital tools

Explaining, reasoning and questioning



Take or defend a position or point of view about a strategy/answer and justify with evidence e.g. recognising relationships, or using counter examples



Ask **questions** to gain more understanding about an explanation



Select and apply the appropriate representations to solve problems e.g. graphs, diagrams, tables, numbers etc.

Growth mindset



Think **creatively** about how to solve an unfamiliar problem



Be confident in taking **risks** and know that I can learn from making **mistakes**

