

CLOVERLEA SCHOOL

MATHEMATICS



At Cloverlea School we use an inquiry approach to investigate mathematical ideas, using patterns and relationships in number and algebra, geometry, measurement and statistics. 'Number Sense' provides the key skills needed for developing and understanding numbers and number relationships to solve mathematical problems. The mathematical problems and content are authentic, relate to our LEGENDs and are culturally responsive. LEGENDs work collaboratively to solve problems that come from a 'Big Idea'. LEGENDs are taught through a variety of strategies including: using equipment, visual images with pattern, Number Talks and dot images, subitizing, stimulation challenges, which one doesn't belong, Talk Moves, 3 Acts, TIP charts, rich tasks, open ended questions and picture books.

IT IS IMPORTANT BECAUSE:

Mathematics skills are used in everyday life. Maths is a universal language. We encourage our Legends to develop a personal interest in the mathematical world around them and provide the tools needed to be innovative and successful. The essential skills that are needed to be independent and successful in the world today and the future include:

- The ability to think and reason logically
- Use of a variety of approaches to problem solving
- Discover problems and find solutions
- Being able to apply current knowledge to show conceptual understanding
- Developing a sense of personal achievement

PLANNING AND TEACHING:

Planning and targeted teaching provides our LEGENDs with opportunities and tools to improve achievement in mathematical thinking and concepts. Key pedagogical practices include:

- building LEGEND classroom norms and ethos with learners
- Explicit teaching of mathematical dispositions and a growth mindset
- Mixed ability groupings when needed
- Systematic and explicit teaching
- Low floor/high ceiling, rich and authentic tasks accessible to all learners
- Visualising, playful settings (deliberate games and hands on tasks), and investigating
- Encouraging active learners and allowing productive struggle
- Providing opportunities for feedback and feedforward
- Mathematical communication - discourse
- Fun, non-threatening teaching and learning basic facts
- High expectations of all students
- Flipped learning
- Appropriate equipment used in all teaching of maths concepts
- A variety of equipment learners can choose to access themselves

MONITORING AND ASSESSMENT:

Monitoring and assessment is an ongoing deliberate process to provide our LEGENDs with opportunities show their learning and raise achievement.

- Diagnostic assessment tools (e.g. JAM, PAT, GloSS, Knowledge Test) to check data and plan for teaching
- Regular, ongoing formative assessment tools (including 5 Practices) guide teaching and monitor progress
- Summative assessment tools (e.g. JAM, PAT, GloSS, Knowledge Test) to celebrate progress and pass on to the following teacher.

LINKS TO OUR LEGEND VALUES:

Lead - know how mathematicians think and communicate mathematical ideas

Excellence - High expectations of all students

Organise - being able to select and organise the appropriate equipment for a task being able to organise thinking to communicate ideas

Resilience - being able to learn from mistakes and understand that is part of the learning process

Inclusive - mixed ability groups, collaborative sharing, talking

Determination- productive struggle and using mathematical discourse

RESEARCH & EVIDENCE:

Brains can grow, adapt and change. This means there is no such thing as a 'maths person'. All students can learn maths. New neural-pathways can be created when students develop a growth mindset and approach to learning. A growth mindset is key in maths. Our best learning takes place when we struggle with mathematics and making mistakes accelerates learning by pushing students to the edge of understanding. Teachers should encourage and model a growth mindset and teach the importance of struggle and mistakes to enable our brains to grow (create new neuro-pathways). Tasks and learning experiences that allow for original thinking enable students to view, develop, use and make sense of mathematics. Creative, flexible thinkers are more likely to engage with numbers flexibly and use number sense to help them solve problems. When students have creative, flexible thinking they are able to demonstrate multiple representations of their understanding. Memories are strongest and best when they access knowledge that is built in different parts of the brain, connected, rich and multi-dimensional. It helps our brains to think of mathematics visually, not just in numbers.

TE TIRITI O WAITANGI OBLIGATIONS:

Article 2 has a focus on wānanga where everyone is seen as an expert for the benefit of all. Learners work collaboratively to contribute to the group, knowing that all contributions are valuable. This is done through mixed ability grouping when appropriate and encouraging our learners to show their thinking. Tuakana/teina also supports wānanga by building reciprocal relationships.

Ārahi, Kairangi, Nahanaha, Manawaroa, Kotahitanga, Rae Pakari

LEAD, EXCELLENCE, ORGANISED, RESILIENCE, INCLUSIVE, DETERMINED