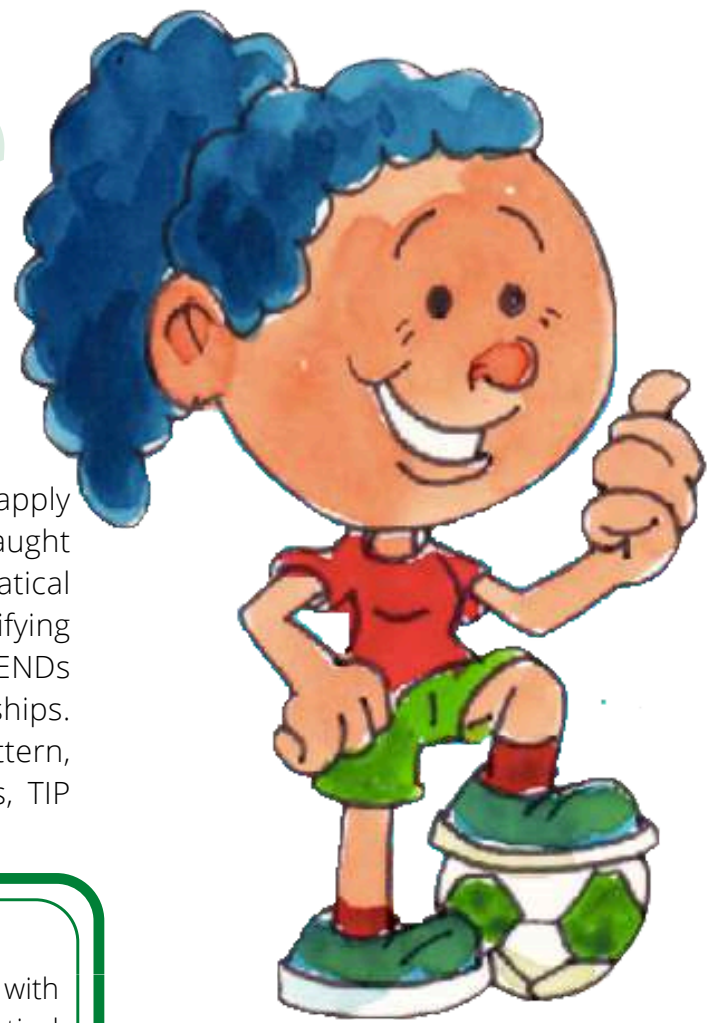


# CLOVERLEA SCHOOL

# MATHEMATICS



In pāngarau (mathematics) at Cloverlea School we balance teaching key knowledge with being able to apply that knowledge in contexts relevant to our LEGENDs. Our maths learning is centred in Aotearoa and taught through the integration of pūrakau. We use a flipped learning approach to teaching key mathematical knowledge so that time with the kaiako can be spent reinforcing learning, checking understanding, clarifying misunderstandings and applying that knowledge to problems that require more adult support. LEGENDs work collaboratively to solve problems as well as working independently and in tuakana-teina partnerships. LEGENDs are taught through a variety of strategies including: using equipment, visual images with pattern, Number Talks and dot images, subitizing, challenges, which one doesn't belong, Talk Moves, 3 Acts, TIP charts, rich tasks, open ended questions and picture books.

## IT IS IMPORTANT BECAUSE:

Pāngarau (maths) is 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:

- Māori ākonga will see, hear and feel themselves reflected in the content and context of the learning;
- LEGEND incorporated into learning and LEGEND language used throughout teaching and learning;
- Explicit teaching of mathematical dispositions/ growth mindset;
- Flipped learning;
- Appropriate equipment used in all teaching of maths concepts;
- Systematic, explicit teaching;
- Mixed ability grouping, incorporating tuakana-teina;
- Kagan structures used to ensure discussion and equal talk time;
- Low floor/high ceiling, rich and authentic tasks accessible to all learners;
- Learning through play (deliberate games and hands on tasks), and investigating;
- Encouraging active learners and allowing productive struggle;
- Providing opportunities for feedback and feedforward;
- Fun, non-threatening teaching and learning basic facts;
- High expectations of all students.

## MONITORING AND ASSESSMENT:

Monitoring and assessment is an ongoing deliberate process to provide our LEGENDs with opportunities to 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 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:

**L**ead - we think like mathematicians think and communicate our mathematical ideas to others

**E**xcellence - High expectations of all LEGENDs. We all do our best.

**o**rGanise - we can choose and orGanise the right equipment for a task and are able to orGanise our thinking to communicate ideas

**r**Esilience - we are able to learn from our mistakes and understand that is part of the learning process

**i**Nclusive - we work in different groups and with any LEGEND, sharing our ideas and listening to those of others.

**D**etermination- we keep working at it, even when learning gets hard.

## 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 tamariki to the edge of understanding. Kaiako 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 enables tamariki 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.

## ENACTING TE TIRITI O WAITANGI:

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 and all thoughts are accepted. 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 and LEGENDs taking turns and modelling for each other.

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

**LEAD, EXCELLENCE, ORGANISED, RESILIENCE, INCLUSIVE, DETERMINED**