

Mathematics and Statistics

Mathematics is the **exploration and use of patterns and relationships in quantities, space, and time**. Statistics is the **exploration and use of patterns and relationships in data**. These two disciplines are related but different ways of **thinking and of solving problems**. Both equip students with effective means for **investigating, interpreting, explaining, and making sense of the world** in which they live. Mathematicians and statisticians use **symbols, graphs, and diagrams** to help them **find and communicate patterns and relationships**, and they **create models to represent both real-life and hypothetical situations**.

Why study mathematics and statistics?

By studying mathematics and statistics, students develop the ability to **think creatively, critically, strategically, and logically**. They learn to structure and to organise, to carry out procedures **flexibly and accurately**, to **process and communicate information**, and to **enjoy intellectual challenge**.

By learning mathematics and statistics, students develop other important **thinking skills**. They learn to **create models and predict outcomes, to conjecture, to justify and verify, and to seek patterns and generalisations**. They learn to **estimate with reasonableness, calculate with precision**, and understand when **results are precise** and when they must be **interpreted with uncertainty**. Mathematics and statistics have a broad range of practical applications in everyday life, in other learning areas, and in workplaces.

The Structure of the Mathematics and Statistics Curriculum

Number and Algebra.

Number involves calculating and estimating, using appropriate mental, written, or machine calculation methods in flexible ways. It also involves knowing when it is appropriate to use estimation and being able to discern whether results are reasonable. Algebra involves generalising and representing the patterns and relationships found in numbers, shapes, and measures.

Geometry and Measurement.

Geometry involves recognising and using the properties and symmetries of shapes and describing position and movement. Measurement involves quantifying the attributes of objects, using appropriate units and instruments. It also involves predicting and calculating rates of change.

Statistics

Statistics involves identifying problems that can be explored by the use of appropriate data, designing investigations, collecting data, exploring and using patterns and relationships in data, solving problems, and communicating findings. Statistics also involves interpreting statistical information, evaluating data based arguments, and dealing with uncertainty and variation.

Mathematics at Pukekohe East School

The expectation is that all children will have the opportunity to develop their number sense, knowledge and strategies engaging in challenging mathematics tasks, have their mathematical thinking heard and valued, believe in themselves and experience success in inclusive and culturally responsive contexts.

In every class, every day, all students will have:

- the opportunity to be challenged, to persist and succeed.
- opportunities to engage in mathematics discourse to clarify their maths thinking and reasoning and build upon other student's explanations in authentic contexts.
- a combination of flexible grouping options including whole-class, small-group, pair or individual.
- time for new learning, practice and consolidation of knowledge and strategies.
- access to concrete materials to assist in learning new concepts.
- access to digital sites and modelling tools to assist learning.
- involvement in a range of assessment processes to make their thinking visible to their teacher to ascertain learning needs and progress.
- a clear understanding of their learning goals and be able to reflect on their progress toward and beyond these goals with increasing independence and ownership.

Assessment and Reporting at Pukekohe East School

Assessment data will be gathered periodically throughout the year to gauge progress and achievement. This data assists with setting and monitoring of school-wide, class, target group or individual goals and learning programmes.

Standardised assessment data is shared with the students, parents and whanau on an individual basis and our BoT related to progress and achievement of year group cohorts.

Progress and achievement will be reported to parents via:

- Seesaw- ongoing (digital portfolio)
- Learning Forums (student, parents and teacher conferences twice yearly)
- a written report covering all curriculum areas.



The first part of this is straight from the NZC as with below.

Tomarata website page below for comparison. Some of it is a bit clumsy and prescriptive- for a website it needs to be more overarching and highlight key elements and beliefs I believe!

What is Mathematics and Statistics about?

Mathematics is the exploration and the use of patterns and relationships in quantities, space and time. Statistics is the exploration and use of patterns and relationships in data. These two are related, but use different ways of thinking and solving problems. Mathematics and statistics use symbols, graphs and diagrams to find and communicate patterns and relationships and create models to represent both real life and hypothetical situations.

How is Mathematics and Statistics structured in the New Zealand Curriculum?

Mathematics and Statistics consist of three strands:

Number and Algebra | Involves calculating and estimating, using appropriate strategies and methods in flexible ways. Algebra involves understanding patterns and relationships found in numbers shapes and measures.

Geometry and Measurement | Geometry involves recognising properties and symmetries of shapes and describing position and movement. Measurement involves using appropriate units to predict and calculate.

Statistics | involves solving problems using appropriate data, designing investigations, collecting data, finding relationships and trends and communicating findings.

How is Mathematics and Statistics taught at Tomarata School?

At Tomarata School we will provide coverage of Mathematics and Statistics using the New Zealand Curriculum for Year 1-8. We will provide a balanced needs based programme of contextual problem solving activities , alongside targeted workshops for student needs, using the school wide mathematics plan.

- Teaching and learning will be supported by shared learning intentions
- Appropriate teaching and learning resources, equipment and games will guide and enhance the teaching and learning of Mathematics and Statistics
- We will provide a balanced programme that addresses student needs, builds on prior knowledge and provides opportunities to use new learning with other real life contexts and/or learning areas
- Students will be accurately assessed and taught to meet their learning needs at the appropriate level

- At risk students are identified and are provided with appropriate support and acceleration
- All classes will have enriching and productive learning environments with established routines and expectations

The Tomarata School Mathematics programme will:

- Be delivered a minimum of four times per week
- Be linked to other learning areas where appropriate
- Provide time for new learning, practice and consolidation of knowledge and strategies
- Integrated practical (“hands on”), authentic and relevant contexts where appropriate

Best practice in Mathematics and Statistics at Tomarata School

Teachers will:

- Place an emphasis on the teaching and learning of Number and Problem Solving
- Show evidence of current teaching practices
- Use appropriate resources and equipment at all levels
- Provide a range of practical (“hands on”), authentic and relevant experiences within all Mathematical strands
- Allow students time to reflect on, and consolidate what they have learnt in Mathematics and Statistics
- Be guided by Numeracy and problem solving teaching models
- Provide opportunities for students to present and communicate new learning in a variety of ways
- Incorporate ICT, questioning and thinking skills to support and extend learning
- Develop and display specific learning intentions, success criteria and student work to enhance student understanding
- Provide opportunities for students to celebrate their learning in Mathematics

How do we Assess and Report Mathematics and Statistics at Tomarata School

Data will be gathered and analysed to ensure we are meeting the individual needs of all students.

Data analysis will inform:

The setting and monitoring of school-wide, class, target group or individual targets

- Reporting to Parents and the Board of Trustees
- Student Groupings
- Students “At Risk” or “Well Above” expectations
- Planning
- Next step learning
- Student’s goals

Mathematics and Statistics information will:

- Provide evidence to guide future teaching and learning
- Be shared with students and parents honestly

- Include assessment in a variety of forms (National Standardised Testing, (eg PAT) Pre & Post Tests, OTJ – Overall Teacher Judgments, Peer and Self Assessments, Formative and Summative)
- Be collected, collated and analysed by teachers and be kept in teacher records, student books and electronically (SMS)