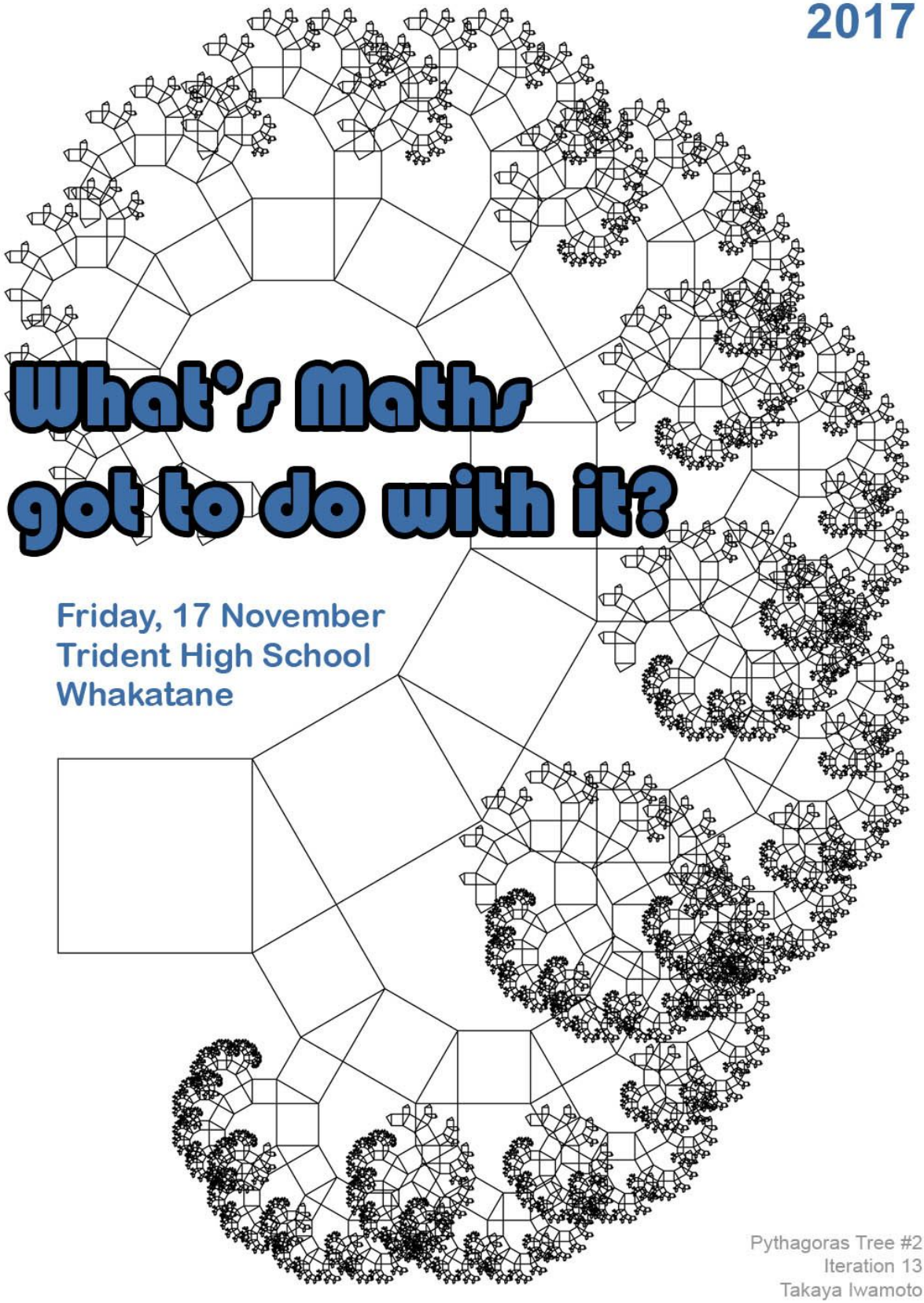
BOPMA Conference 2017



What's Maths got to do with it?

Friday, 17 November
Trident High School
Whakatane

Pythagoras Tree #2
Iteration 13
Takaya Iwamoto

2017 BOPMA Conference
Friday 17 November

Hosted by: Trident High School, Arawa Road, Whakatane

9:00 - 9:30	**Arrival**
9:30 - 10:00	**Welcome**
10:00 - 11:00	**Session 1**
11:00 - 11:30	**Morning tea**
11:30 - 12:30	**Session 2**
12:30 - 1:30	**Lunch**
1:30 - 2:30	**Session 3**

Internet Access

Please join the WiFi Network
THSGuest
When you open a browser, you should be prompted for a key. Use this:
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For some websites, you may be asked for an extra login. Use this:
Username: Maths
Password: Trident17

Presenter	Targeted audience and strand	Workshop details	Room
Session 1			
Michael Shadbolt mshadbolt@otc.school.nz	Junior Statistics Level 2+3 Statistics	**Statistics Killed The Radio Star (yes it did)** The Edge is NZ's #1 radio station. And Newstalk ZB is NZ's #1 radio station. …wait, what? 72.4% of Kiwis aged 10-17 listen to a commercial radio station in NZ each week. Or so they say - the fate of radio stars depends entirely on sample data gathered with a flawed, archaic survey methodology. In this interactive workshop, we look at how to use the radio industry as a context for junior statistics through to level 2 and 3 Statistical Reports standards. We will cover where to find data, graphs, reports and statistics, and how to serve them up with a healthy dose of Awesomesauce.	**A5**
Helen Adams hadams@aquinas.school.nz	Year 7 - 11	**Making sense of Algebra** (repeat of NZAMT 2017 workshop) In traditional text books and teaching, the topics of Number and Algebra are treated as separate units. In reality algebra is just the generalisation of number. I have been working to help students (and teachers) see the link between the two. Students often struggle with algebra as it does not seem to relate to any other mathematics that they have done before. I have developed some techniques and strategies that I hope will make clear links between number and algebra, and make more sense of the algebra that we teach. This is a hands-on workshop. I am an experienced teacher of mathematics and am always looking for ways to improve my practice. I have been head of faculty in two schools but am now a regular classroom teacher which has given me more time to reflect on the changing face of Education, and to further develop some of my pet ideas about student learning and understanding.	**A15**
Deb Ganley ganleyd@trident.school.nz	NCEA Level 2+3	**Pathways for Financial Literacy in Mathematics** Developing courses for all ability senior students to keep them engaged in mathematics through Financial Literacy. In this workshop we will go over how Trident High school (THS) have created new Level 2 and 3 mathematics courses using the financial literacy standards. Where to access a whole bunch of FREE resources on these standards, how to apply for funding for the not so free resources, and how to keep the lower ability students engaged in Mathematics learning life long skills. The high's and low's of THS's past two years will be presented.	**A9**

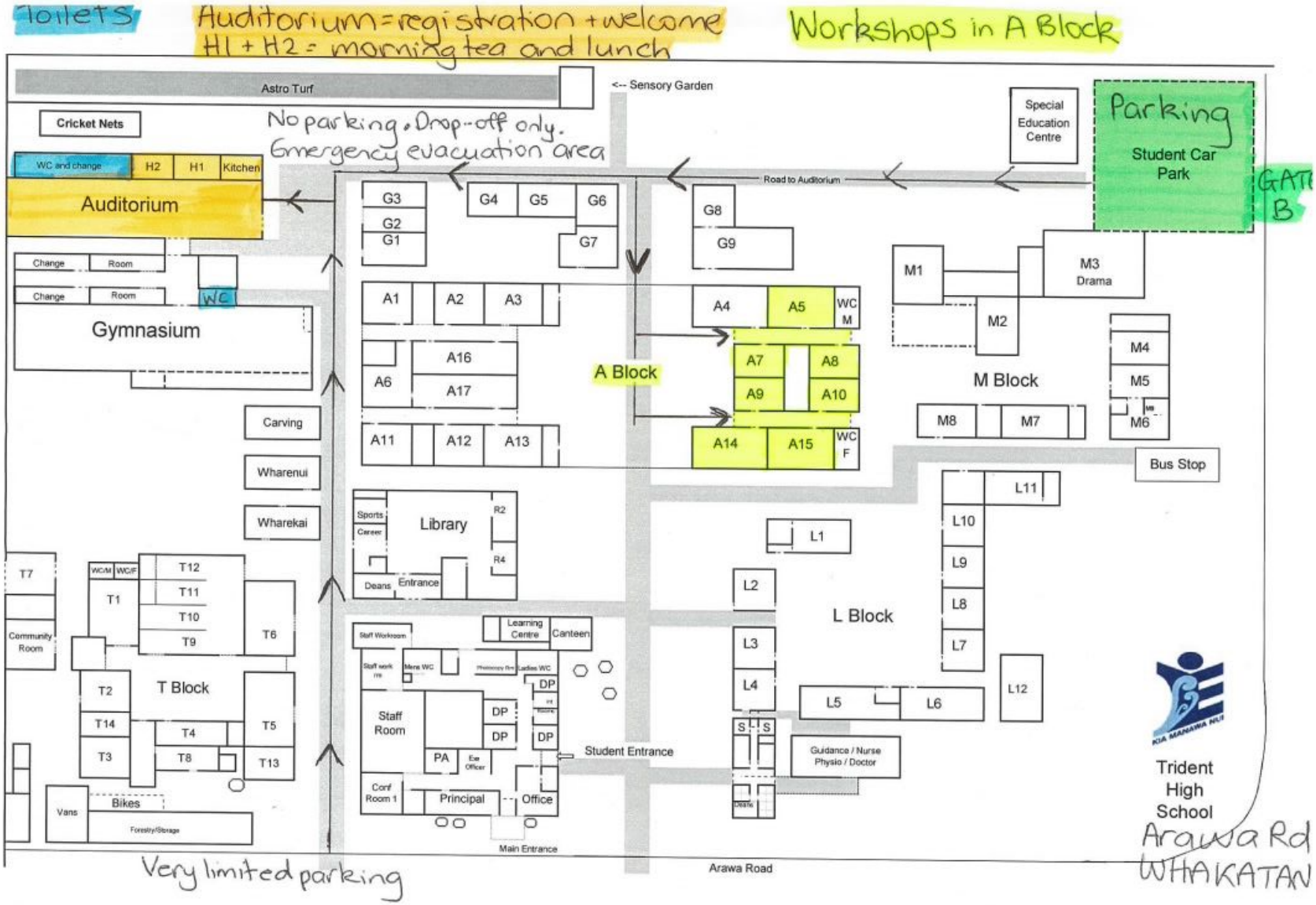
Jim Hogan j.hogan@auckland.ac.nz	Year 6, 7 & 8 Statistics	**Year 7/8 Statistics for Year 7/8 Teachers** There are some important ideas that need to be developed so students can “make sense of data.” This is the world of “the eyes have it.“ Learn how to use the PPDAC frame as a data detective, get the main concepts established, ask all the crazy questions and discover Taupo Trout. I have crafted a scheme with a series of units and resources all of which are free and available. I will have copies but it is all on the web. This would be a good match with Dave Lewis's workshop. No equipment needed.	**A10**
Taryn Johnson tjohnson@katikaticollege.school.nz	Relevant to all students the context will primarily be low achievers/NCEA level one numeracy.	**Mindsets, motivation and management.** Increasingly students lack of skills to manage their mental and emotional health impacts on their learning. The challenge for teachers is to equip students with the mindsets, motivation and self-management to support their learning and success. Getting students to "think success" is powerful for all levels of academic achievement, perhaps more so with low achievers. Supported by my Masters in Teaching and Learning (Hons), research from Hattie, Dweck, St George, Riley and others, experience as HOD in two schools, including decile1-2 Tokoroa High School (where I raised the pass rate in level 1 Algebra from **13% to 69% i**n one year...and had similar gains in other topics and levels), and various in school research projects I will share strategies that seem to work with my students. I will use low achieving classes as the primary though not exclusive context for this. Principles and strategies work at all levels.	**A7**
Neil McDermid nmcdermid@otc.school.nz	Algebra/Graphing/Calculus	**Desmos in the class** The use of Desmos for assessing and learning. Algebra/Graphing/Calculus focus. Using the Desmos graphing package to enhance students' understanding of Graphing, Kinematics, Calculus.	**A8**
Robyn Foster robyn.foster@rteach.co.nz	Everyone	**Reciprocal Teaching and Maths** Reciprocal teaching is an approach where students take scripted roles to scaffold problem solving and develop their essential learning skills for the future. CCCC is Communication, Creativity, Critical Thinking & Collaboration - This approach builds all of these skills and in the process students learn mathematics as well.	**A14**

Session 2			
Michael Carroll carrollm@trident.school.nz	Teachers with an interest in computer-aided design and manufacture (CAD/CAM)	**Can we use CAD/CAM technology to enrich the teaching of Mathematics?** Our school has recently purchased a CNC router, a laser cutter, and two 3D printers. I am trying to explore ways of incorporating this technology into my teaching.I will show you a couple of examples, and will demonstrate the entire process from idea, to design, to fabrication in the technology department. I'm hoping someone will bring an idea of something to make that we can use as an example!	**A7**
Dr Nic n.petty@statslc.com	Upper primary Junior Statistics	**What mathematicians do - encouraging engagement in junior maths** Teachers need to experience the fun and possibilities of being a mathematician. Participants will practise being mathematicians and lessons. The workshop builds on successful free events at primary schools in rural Canterbury and the West Coast and ideas about what it means to be a mathematician. You can see more about it here: https://learnandteachstatistics.wordpress.com/2017/10/09/rich-maths-with-dragons/ Dr Nicola Petty (Dr Nic) is well known for her innovative and engaging approaches to teaching statistics and mathematics. She has spent the past 25 years developing online and physical learning resources for primary, secondary and university students. Nicola is a qualified high school mathematics teacher with additional experience teaching innovative primary school mathematics lessons and running mathematics events. Nicola writes a well-respected statistics learning and teaching blog and keeps current with thinking and research about mathematics education through reading and participating in the MathTwitterBlogosphere. She is co-director of Statistics Learning Centre, a social enterprise with a mission to invent, create and disseminate resources and ideas to enable people to learn and teach mathematics and statistics in a more enjoyable way.	**A5**
Dave Lewis lewisd@trident.school.nz	Upper primary Junior Statistics	**PPDAC Fishing** Year 7 to 10 Statistics all wrapped up in a sea fishing context. Dave took the Taupo Trout ideas and created a new large database of colourful little fish data cards. He uses little magnetic fish "hooks" for students to fish and select randomly. The key ideas of random, sample, population, middle, typical, spread, questions, relationships and comparison are developed at these levels. PPDAC data detective approaches also develops writing literacy.	**A9**

Lorraine O'Carroll locarroll@reporoa.school.nz	Everyone	**Hands on activities for teaching Risk** (repeat from NZAMT Conference) Risk is one of the most important concepts we can teach our students, as insurance and weighing up risks will be a part of their working life. This workshop will include a range of teaching activities that introduce concepts of risk, not just relative risk.	**A14**
Margi Leech margi@numicon.co.nz	Everyone	**Maths Anxiety - Maths strategies for difficulties** Place value, decimals, division, fractions, algorithms-these seem like harmless maths terms. But, to many children, they bring out fear and great anxiety or 'giving up' when it comes to mathematics. Children now, more than ever are struggling with Maths. What is the cause for concern and what can you do to support them and their learning? Margi Leech has been working with these students for many years. She brings her experience and knowledge of these difficulties and dyscalculia to help you support these students, some of whom may be bright in other subjects, but not in Maths. We will explore the nature of these difficulties as well as some strategies and apparatus that give students a 'picture' of the abstract nature of maths.	**A8**
Renee Draffin renee.draffin@putarurucollege.school.nz	Junior	**Sport in Mathematics** Our school is part of the Sport in Education Programme which encourages active learning both inside and outside of the classroom to increase student engagement and improve academic, social and sporting outcomes. Our focus has been on the integration of collaborative units into our Year 9 and 10 programmes. In this workshop, I will discuss our journey so far and share some of the resources and active ideas that have been successful with our Maths classes.	**A15**
Charlotte Wilkinson charlotte@ncwilkinsons.com	Junior - curriculum level 2, 3, 4	**New mathematics knowledge and skills assessment screen for curriculum levels 2, 3 and 4.** The screens were developed in conjunction with schools receiving students from many different feeder schools and trying to work out their actual learning needs in mathematics. I will share the screens and the findings from trials using the screens with year 6, year 8 and target year 9 students.	**A10**

Session 3			
Helen Adams hadams@aquinas.school.nz	Year 7-13 teachers	**Creating a problem-focussed maths classroom** (repeat of NZAMT 2017 workshop) The problems that are asked and answered in a traditional maths classroom tend to be: contrived, closed, or no relevance or connection to the real world, and can be answered within2 or 3 minutes. I have been developing and trialling a problem-focussed classroom based on 'Singapore Maths' combined with 'Bobbie Maths'. The focus of the class is on solving a big problem, using student's' internal understanding and knowledge of mathematics and of the world around them. The big theme is about 'discovering' some element of mathematics or link, rather than being told it explicitly. In this classroom there is still time and place for regular drills and skills and students are encouraged to self-manage. Whole class teaching is also relevant and has its place. Students are empowered to be self-determining and self-directing. The teacher becomes more of a resource than a central figure. In this workshop I will be explaining how the classroom is managed and sharing some ideas and 'big' problems that can be used in any junior classroom. I am an experienced teacher of mathematics and am always looking for ways to improve my practice. I have been head of faculty in two schools but am now a regular classroom teacher which has given me more time to reflect on the changing face of Education, and to further develop some of my pet ideas about student learning and understanding.	**A15**
Dr Nic n.petty@statslc.com	Everyone	**Developing mathematical and statistical fluency at all levels** Description: Number fluency is essential for continuing development in mathematics. At higher levels, students also need fluency in recalling and applying concepts and rules around algebra, calculus and other areas of mathematics. Fluency is often associated with speed of recall, whereas it involves conceptual understanding and ability to transfer. In this workshop we will examine a range of tasks, and explore how they help students develop fluency in a holistic way. Dr Nicola Petty (Dr Nic) is well known for her innovative and engaging approaches to teaching statistics and mathematics. She has spent the past 25 years developing online and physical learning resources for primary, secondary and university students. Nicola is a qualified high school mathematics teacher with additional experience teaching innovative primary school mathematics lessons and running mathematics events. Nicola writes a well-respected statistics learning and teaching blog and keeps current with thinking and research about mathematics education through reading and participating in the MathTwitterBlogosphere. She is co-director of Statistics Learning Centre, a social enterprise with a mission to invent, create and disseminate resources and ideas to enable people to learn and teach mathematics and statistics in a more enjoyable way.	**A5**

Steven Miller steven.miller@waikato.ac.nz	Senior Statistics - L2+L3	**Sampling and Margin of Error** An illustration of some key ideas involved in the conduct of sample surveys and the estimation of, and inference for proportions, using the 2017 General Election as a topical example. We talk about ideas that are covered in the senior levels of secondary statistics, which we revise in our first-year tertiary papers at the University of Waikato, and take a brief look at the application of some more advanced modelling approaches that we cover in our higher level papers. This material has been slightly expanded from a talk I gave earlier this year to secondary students preparing for the statistics scholarship exam.	**A10**
Lorraine O'Carroll locarroll@reporoa.school.nz	Junior	**Junior cross-curricular project** A look at a cross-curricular unit of work based on healthy local waterways. Based on an inquiry cycle where students could develop their own inquiry based on the theme. As part of this unit the Mathematics department focused on statistics with the help of trout data from Lake Taupo in order to support other subjects with their data based inquiries. This workshop will look at where to find units of work (including other units separate from waterways), material and support.	**A14**
Jim Hogan j.hogan@auckland.ac.nz	Years 5-10 teachers	**Practical Multiplicative Reasoning** These are activities and strategies to use to keep that “unrelenting focus on make every student multiplicative as soon as possible”. Keeping the foot on this pedal will accelerate all students and quite quickly. Multiplicative Reasoning (MR) is knowing and using multiplication facts, squares, factors powers and multiples. It is about giving an answer and the reason as well. MR is the expectation for Year 7 and 8 students and opens the door to success, pathways and choice in Secondary Senior School.	**A9**
Kathrene Webb and Sonia Deering kathrene.webb@tepuke.school.nz sonia.deering@tepuke.school.nz	Junior Geometry + Algebra	**Algebra of Aotearoa** Tukutuku panels provide a great culturally responsive context for developing algebra skills. Students can form generalisations and equations in the patterns behind tukutuku patterns. From this, students can create existing tukutuku patterns, or design their own, using DESMOS. It is a great context for integrated learning. We will share our journey with our Algebra of Aotearoa unit.	**A7**
Neil McDermid nmcdermid@otc.school.nz	Year 11+	**Generalising Number to Algebra.** Scaffolding the skills needed to cope with the MCAT and beyond. Reviewing the number skills and looking at tips to get students thinking algebraically. The workshop is about exploring where algebraic algorithms come from so that students can have something to "hang their understanding on."	**A8**


Toilets
Auditorium = registration + welcome
H1 + H2 = morning tea and lunch
Workshops in A Block
Astro Turf
<-- Sensory Garden
Cricket Nets
No parking. Drop-off only.
Emergency evacuation area
Special Education Centre
Parking
Student Car Park
GATE B
WC and change
H2
H1
Kitchen
Auditorium
Road to Auditorium
G3
G2
G1
G4
G5
G6
G7
G8
G9
Change Room
Change Room
WC
Gymnasium
A1
A2
A3
A4
A5
WC M
A16
A6
A17
A7
A8
A9
A10
A11
A12
A13
A14
A15
WC F
A Block
M1
M3 Drama
M2
M4
M5
M6
M8
M7
M Block
Carving
Wharenui
Wharekai
Bus Stop
Sports
Career
Library
R2
R4
Deans
Entrance
L11
L10
L9
L8
L7
L1
L2
L3
L4
L5
L6
L12
L Block
T7
WC/M
WC/F
T12
T11
T10
T9
T1
T6
Community Room
T2
T14
T3
T4
T8
T5
T13
T Block
Staff Workroom
Learning Centre
Canteen
Staff work rm
Mens WC
Ladies WC
DP
Staff Room
PA
Exe Officer
Conf Room 1
Principal
Office
Student Entrance
Main Entrance
S
Guidance / Nurse
Physio / Doctor
Vans
Bikes
Forestry/Storage
Arawa Road
Trident High School
Arawa Rd
WHAKATANE
Very limited parking