

National Newsletter: Mathematics and Statistics

Information and resources for middle leaders in secondary schools | Term 2 2013

Whakatauki

Ma te huruhuru, ka rere te manu.
Adorn the bird with feathers so it can fly.

Welcome to term 2, 2013. We hope that you have enjoyed a restful break and are looking forward to the return to the classroom. Marc Paterson joins the facilitation team from term 2 until the end of 2013. Marc comes from Awatapu College in Palmerston North and will be working in the Central South region.

Please make sure that this newsletter is circulated to your department staff.

Term 1 national workshops

In term 1, the first round of our free national workshops ('Getting Connected') was attended by over 500 mathematics middle leaders. For the first time the focus of these shifted from just curriculum content to a focus on student achievement by working with middle leaders around pedagogy.

Not many middle leaders were familiar with Teaching as Inquiry or had worked with their departments around this. A recent ERO report noted,

"There are clear benefits for students and teachers when inquiry happens well."
(ERO, 2012)

<http://www.ero.govt.nz/National-Reports/Teaching-as-Inquiry-Responding-to-Learners-July-2012/Overview>).

It is worth noting that this is a requirement to be included in portfolios for teacher registration from 2013.

The feedback from these workshops was very positive and has helped us to craft the workshops to be held in term 2. Some of the main points were:

- The importance of learning progressions from level 1 to level 8 across the strands in understanding the foundations on which senior work is based. This is especially true where new ideas need to be imbedded early e.g. statistical inference.
- The significance of subject specific literacy.
- The design of courses to align pathways with student achievement.

National workshops continue in term 2

Every school should have access to these national workshops. In all workshops, consideration will be given to raising the achievement of priority students – Māori learners, Pasifika learners and learners with special education needs.

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Appointment pending. In the interim, contact Derek Smith (details above).

National workshop content – term 2

These national workshops are free for Mathematics and Statistics middle leaders as they are funded by the Ministry of Education. Regional facilitators will advise the venues, times and enrolment details soon via email.

Content

At the term 2 national workshops middle leaders will have the opportunity to discuss current issues and trends. Topics will include:

- Revisiting NCEA Level 3 – tasks/resources/pedagogy
- External examination preparation – subject specific literacy
- Writing and editing assessment tasks
- Course design including SOLO and ALIM
- Progressions – preparing junior students (Y9 and 10) for success in NCEA L1, 2 and 3 in number/algebra – measurement/geometry.

Dates

17 th June Cromwell	18 th June Invercargill	18 th June Christchurch
18 th June PM Tauranga	19 th June Dunedin	19 th June PM Waikato
20 th June Timaru	20 th June PM Napier	21 st June AM Gisborne
26 th June Kohia	27 th June Auckland	1 st July New Plymouth
1 st July Auckland	2 nd July Palmerston North	
3 rd July Blenheim	3 rd July Whangarei	5 th July Nelson
8 th July Masterton	9 th July Lower Hutt	9 th July Greymouth
10 th July Wellington		

NCEA L1, 2 and 3 exemplars

Examples of student work against the achievement standards for Levels 1, 2 and 3 (internal and external) are stored on the NZQA website (links below) to assist in guiding teachers on assessment.

- [Level 1](#)
- [Level 2](#)
- [Level 3](#)

Clarification of achievement standards

AS 3.5, Complex numbers

When interpreting AS91577 *Apply the algebra of complex numbers in solving problems*, it is important to be aware that real numbers are a type of complex number, but that only one of the 8 methods listed in the standard relates specifically to real numbers.

This means that the sample examination currently on the NZQA website is not likely to be indicative of the content of the actual external examination for this standard, but the sample examination is expected to be updated.

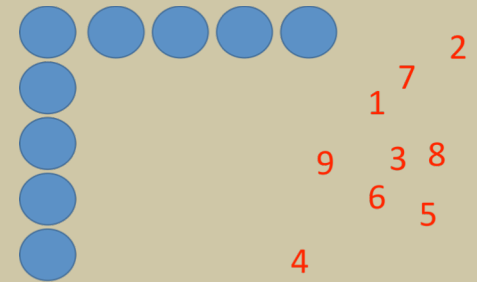
AS 3.14 Distributions

The Ministry of Education has clarified that AS91586 *Apply probability distributions in solving problems* **does not** include linear transformations, sums nor differences of **continuous** random variables. The Senior Secondary Teaching and Learning Guide on TKI says, "Calculating and interpreting expected values and standard deviations of discrete random variables" includes, "Solves and interprets solutions of problems involving linear transformations and sums (and differences) of [discrete random variables](#)."

Continuous random variables *per se* are included in both AS91585 and AS91586, but linear transformations, sums and differences of continuous random variables are not included in any standard. Note that the sample examination on NZQA is not currently in line with the standard, but the sample examination is expected to be updated.

Problems...

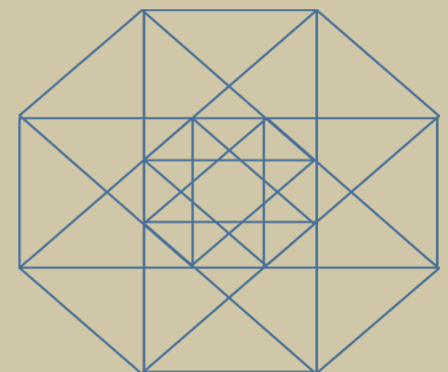
Using the digits 1, 2, 3, 4, 5, 6, 7, 8 and 9 once and only once, where can they be placed so that the horizontal sum equals the vertical sum.



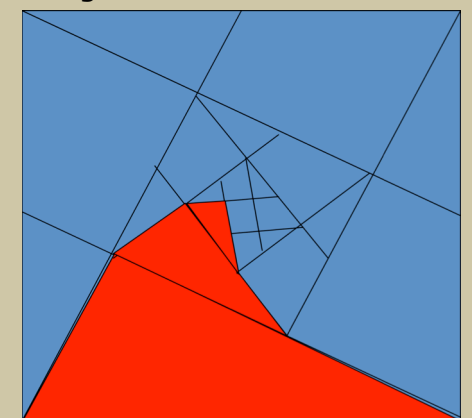
How many solutions are there in total?

Using eight sheets of A4, what different designs can you create?

By overlapping, or end to end placement of the A4 sheets.



What is $\frac{1}{5} + \frac{1}{5^2} + \frac{1}{5^3} + \dots$ as a diagram?



What other diagrams/designs can you create that illustrate a solution for a geometric sum to infinity $[0 < r < 1]$?

3.8 Time series

Please be aware that some of the information on Census@School about AS91580 is not current and relates to a previous draft of the standard. Students are not required to do more than one time series analysis for merit nor for excellence. Students can gain merit or excellence using analysis of only one time series. Be cautious with using iNZight for predictions and the weight that Holt-Winters exponential model gives to the more recent values.

Please ensure that these interpretations are clearly communicated to your teachers and students.

Conditions of assessment links

These have been updated to further amplify aspects of assessment against each of the achievement standards. Links to the internals and externals documents are provided below.

Internal assessment

[Level 1](#)

[Level 2](#)

[Level 3](#)

External assessment

[Level 1](#)

[Level 2](#)

[Level 3](#)

Moderation clarifications

NZQA Moderator's newsletters can be accessed from:

<http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/mathematics/moderator-s-newsletter/december-2012/>

The NZQA moderators have also provided feedback from the 2012 moderation cycle, further documents to assist schools in their assessment against the Level 1, 2 and 3 achievement standards. Please click on the links below:

[Level 1](#)

[Level 2](#)

[Level 3](#)

NZAMT13 conference

Venue: Wellington Girls College

Date: 1 - 4 October 2013

Registrations and calls for workshop presentations (abstracts) are now open.

Visit: <http://nzamt13.org.nz/index.php>

Supporting teaching resources on nzmath

The table presented on this link provides information relating to both the New Zealand Curriculum achievement objectives and the Mathematics standards <http://www.nzmaths.co.nz/nzc-and-standards> illustrating links to where the student was working at, prior learning and next steps.

The Secondary mathematics link is

<http://www.nzmaths.co.nz/secondary-mathematics-and-statistics>

Youth Guarantee update

How well does your school compare in terms of the Government's Youth Guarantee goal of having 85% of school leavers achieving NCEA L2 by 2017? Sensible pathways leading to meaningful employment and career choices are vital. For more info:

<http://youthguarantee.net.nz/vocational-pathways/education-providers/>

Online updates

2013 is the...

Mathematics of Planet Earth year

<http://mpe2013.org/>

International Year of Statistics

<http://www.isi-web.org/recent-pages/490-2013-international-year-of-statistics-iystat->

Are you registered?

nzmaths learning community forums

These forums are still active and we encourage you to continue posting questions so that the mathematics community can continue to be well informed. Registration for new participants via:

<http://nzmaths.co.nz/user>

All seven forums can be accessed via:

<http://nzmaths.co.nz/plc>

NZC Mathematics and Statistics descriptor page



What stands out?

Secondary literacy online

These pages will help secondary teachers gain an understanding of the literacy demands within subject areas and required by the curriculum.

They will also support teachers to develop teaching and learning programmes based on the literacy needs of their learners:

<http://literacyonline.tki.org.nz/Literacy-Online/Secondary-Literacy>

ESOL online

Online resources for ESOL specialists, primary, and secondary teachers:

<http://esolonline.tki.org.nz/>

Literacy and Numeracy on NZQA site

There is a new Literacy and Numeracy landing page live on the NZQA site. It was developed in order to have all of the information from NZQA and TKI sites accessible in one place - worth bookmarking for easy access:

<http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/literacy-and-numeracy/>

Geogebra

This freeware has had a version update which now supports statistical graphing from imported spreadsheets:

<http://www.geogebra.org/cms/en/download/>

Census at School

CensusAtSchool New Zealand should be your first port of call for information and support for your teaching of statistics:

<http://new.censusatschool.org.nz/>
<http://new.censusatschool.org.nz/explore/>
<http://new.censusatschool.org.nz/resources/>

Teachers can register their Year 5-13 classes now. CensusAtSchool's data collection period started on 6th May 2013.

Visit: <http://new.censusatschool.org.nz/take-part/>

May 6	Launch of CensusAtSchool survey
May 9	Some interesting initial statistics from the survey data released
June 15	End of CensusAtSchool data collection period
July 29	CensusAtSchool nationwide database available for sampling from and exploring

Support your local mathematics association

Regional mathematics competitions hold regular meetings and workshops to support teachers in the regions. For contact details, visit:

<http://www.nzamt.org.nz/regional-contacts>

Regional support teacher-only days are being organised by local principals' associations in some regions via the regional mathematics associations, giving teachers at all levels the opportunity for professional learning.

TKI, NZQA and NZAMT RSS feeds

A reminder about registering for these updates from these sites via RSS feeds or adding the URLs to your favourites bar:

- TKI www.tki.org
- NZQA www.nzqa.govt.nz
- nzmaths www.nzmaths.co.nz
- NZAMT www.nzamt.org
- Census@school <http://new.censusatschool.org.nz/>

Have you seen....

Middle leaders on TKI

<http://nzcurriculum.tki.org.nz/Secondary-middle-leaders/PLD>

Leading from the Middle

The qualities, practices and activities middle and senior leaders need to lead in ways that enhance learner outcomes.

<http://www.educationalleaders.govt.nz/Leadership-development/Professional-information/Leading-from-the-middle>

ERO report links

Report on Teaching as Inquiry - Responding to Learners

<http://www.ero.govt.nz/National-Reports/Teaching-as-Inquiry-Responding-to-Learners-July-2012>

Pasifika Education Plan

Aiming to achieve optimum learning to guide and support Pasifika learners, their families and educational providers.

<http://www.minedu.govt.nz/NZEducation/EducationPolicies/PasifikaEducation/PasifikaEducationPlan2013.aspx>

iNZight

A new graphics driver which makes the animations play at acceptable speeds on Macs (~100 Mb)

http://www.stat.auckland.ac.nz/~wild/downloads/Mac_iNZightVIT_13-04-22.zip

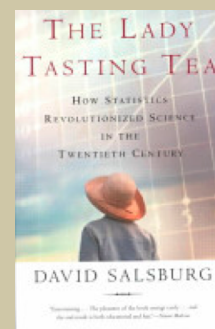
Teachers as learners

Teachers as learners: Improving outcomes for Māori and Pasifika students through inquiry:

<http://nzcurriculum.tki.org.nz/Curriculum-stories/Case-studies/Teachers-as-learners-Inquiry>

The Lady Tasting Tea

How Statistics Revolutionized Science in the Twentieth Century



An insightful, revealing mathematical read. Written by David Salsburg.