



# Mathematics Council NEWSLETTER

The Alberta Teachers' Association

Volume 30

Number 3

September 2012

## President's Message

**W**elcome back to the 2012/13 school year. I hope you have returned with an abundance of enthusiasm and energy. A new school year always brings challenges and, for me, a sense of excitement. What kind of students will I have? How can I do a better job of teaching my students? How can I help those who need it the most? How can I inspire students to love math as much as I do?

In our roles as teachers, math specialists, coordinators and curriculum leaders, we must take full advantage of all opportunities to help students and colleagues develop an enduring love for math. Far too many students and their parents have had negative experiences, which have led to math anxiety and even math phobia. Key to our role as teachers and facilitators is alleviating anxieties or phobias so that students are set up to successfully learn the value and the beauty of math in today's world.

Researchers suggest that the traditional way of teaching math is an underlying cause of math anxiety.

Typically math phobics have had math presented in such a fashion that it led to limited understanding. ...

Many of the students I've encountered with math anxiety have demonstrated an over reliance on procedures in math as opposed to actually understanding the math. When one tries to memorize procedures, rules, and routines without much understanding, the math is quickly forgotten and panic soon sets in. (Russell nd)

In the new curriculum the real learning of math is much more than procedures and memorizing. We facilitators of learning must honour the curriculum by teaching for enduring understanding. Teachers must maintain due diligence in order to reach and teach all students at their individual learning levels and to provide parents and colleagues with tools to develop a positive attitude toward math. The time has passed where it is acceptable for people to proudly say that they were never good at math.

I would like to challenge all math teachers to make every effort to assist others to love math in its truest form. A quote from retired University of Denver professor Stan Gudder expresses the need for all of us to challenge ourselves to help others love math: "The essence of mathematics is not to make simple things complicated but to make complicated things simple." Please join me in this challenge and let's share the love of math!

Have a fantastic year!

Remember do math and you can do anything!

### Reference

Russell, D. nd. "Math Anxiety." About.com Mathematics website. <http://math.about.com/od/reference/a/anxiety.htm> (accessed September 10, 2012).

Marj Farris



## Contest Winners

Alberta High School Mathematics Competition Winner  
*Julian Salazar, Henry Wise Wood High School, Calgary*

Edmonton Junior High Mathematics Contest Winner  
*Ling Long, Vernon Barford School, Edmonton*

Edmonton Junior High Mathematics Top School  
*Vernon Barford School*

Calgary Junior Mathematics Contest Winner  
*Jeffrey Zhou, Westmount Charter School*

## From the Editor's Laptop

Another school year has arrived and with it another milestone—the final stage of implementation of the new math program. To help with this the Alberta consortia are offering a number of PD opportunities, and you can find more at the math conference this fall. Take some of these opportunities to help everyone through this last step of the process, and enjoy the “new” math!

Have a great year!

*Karen Bouwman*

### “Math Is Not a Spectator Sport”

#### 2012 MCATA Conference Jasper Park Lodge

Join us October 12–13 in beautiful Jasper, Alberta, for the 2012 MCATA conference. This is a chance to listen to amazing keynote speakers and attend five sessions of your choice put on by a variety of presenters. For more information and to register, please go to [www.mathteachers.ab.ca](http://www.mathteachers.ab.ca). Register today!

Reminder: Bring back any MCATA conference bag to the 2012 conference and receive a special gift.

#### Saturday-Only Special

The Mathematics Council will be offering a Saturday-only registration package for teachers who are unable to attend on Friday. This Saturday package will include breakfast, a keynote speaker and two Saturday sessions.

#### Important

Walk-up conference registration must be paid by cheque. We are not equipped to handle credit cards. If you wish to use a credit card, please preregister online. Visa and MasterCard will be accepted at [www.mathteachers.ab.ca](http://www.mathteachers.ab.ca).

## Spring Symposium Report

Mike Shaughnessy, past president of the National Council of Teachers of Mathematics (NCTM), was the speaker at the annual MCATA Spring Symposium, in Calgary on May 4. Shaughnessy shared his ideas on the importance of developing and assessing student reasoning. He believes reasoning is student centred and begins with students questioning, exploring ideas and justifying solutions. Shaughnessy led the group of mathematics teachers and leaders through a series of activities designed to model strategies for infusing the mathematics classroom with reasoning and sense making. A focus on reasoning and sense making, when developed in the context of important content, will ensure that students can accurately carry out mathematical procedures, understand why those procedures work and interpret the results.

The following tips for the classroom will help teachers get started:

- Provide tasks that require students to figure things out for themselves (See samples in “Problems to Ponder” at [www.nctm.org](http://www.nctm.org)).
- Give students time to analyze a problem intuitively, explore the problem further using models, then proceed to a more formal approach.
- Resist the urge to tell students how to solve problems.
- Ask questions that will make students think.
- Encourage students to ask probing questions of themselves and others.
- Establish a classroom climate in which students feel comfortable sharing their mathematical arguments and critiquing the arguments of others.

During his presidency, Shaughnessy made reasoning and sense making a focus of his work. Stressing reasoning and sense making is a way to approach instruction no matter what content you are teaching. For activities to use in your classroom that will have students make and evaluate mathematical conjectures and arguments, explain their thinking and justify solutions, go to the NCTM website ([www.NCTM.org](http://www.NCTM.org)). Shaughnessy wrote a monthly “Problems to Ponder” column in NCTM’s *Summing Up*. Find activities by clicking on About NCTM, the President’s Corner, then Problems to Ponder.

Symposium participants have reported using many of Shaughnessy’s activities with their students and colleagues and expressed appreciation for the practical ideas that help teachers support student reasoning and sense making.

The next MCATA symposium will be held on May 3, 2013, in Red Deer. If you have specific topics that you would like to see included in the symposium, please e-mail your ideas to [Debbie.Duvall@eips.ca](mailto:Debbie.Duvall@eips.ca).

# Alberta Education Message

The beginning of the 2012/13 year is a monumental one for mathematics in Alberta as the final courses in the revised mathematics programs of study—Mathematics 30-1, 30-2 and 30-3—are being implemented. Thanks to the hard work and expertise of all stakeholders we are at this exciting point, and I sincerely thank all of you who were involved in this process.

I'd also like to introduce myself as the new MCATA Alberta Education representative. I am very pleased to serve in this role of working with Alberta mathematics teachers to help ensure that students continue to learn mathematics in a deep, conceptual way, and enjoy the process. I wish to extend my personal thanks to our former representative, Christine Henzel, who has taken on new responsibilities as director of Mathematics, Arts and Communications Branch, here at Alberta Education.

## The Mathematical Processes— Problem Solving

The feedback from one of the earliest consultations with teachers during the development of the WNCPC Common Curriculum Framework contained this recommendation:

When revising the draft curriculum, look for opportunities to explicitly highlight problem solving and other mathematical processes in the learning outcomes. This is in addition to the process coding that is presently included with each learning outcome.

—*Consultation Draft for the Common Curriculum Framework Kindergarten to Grade 9 Mathematics Final Analysis Report*

This recommendation from teachers underlines the importance of true problem solving as a focus of the teaching and learning of mathematics. As a mathematical process, learning through problem solving involves much more than learning how to solve a problem—it goes beyond giving students word problems that ask them to draw out relevant information in order to find the answer to a question. Students should have opportunities to be exposed to novel problems, both alone and with other students, so that they can discover mathematics using knowledge already acquired. The challenge for teachers, at all levels, is to develop the mathematical process of problem solving alongside the knowledge and to seek opportunities to present even routine mathematics tasks in problem-solving contexts. You can see an example of problem solving embedded in a mathematics classroom in an amazing video that is part of a new series of videos and fact sheets developed by Alberta Education highlighting the seven mathematical

processes identified in the programs of study. Each video shows an Alberta classroom where students are developing a specific mathematical process, and the accompanying fact sheet explains the process in more detail and gives ideas as to how to encourage its development both inside and outside the classroom. Look for the videos and fact sheets on our mathematics webpage in both English and French in September. Don't forget that for all the latest information about the revised mathematics program and new supports for implementation, see our webpage at [www.education.alberta.ca/math](http://www.education.alberta.ca/math).

## Standards Documents for Non-Diploma Exam Courses

Revised *Outcomes with Assessment Standards* documents for Mathematics 10C and 10-3 were posted on our webpage in June; they now include correlated examples from the authorized resources for each course. In addition, the *Draft Outcomes with Assessment Standards* document for Mathematics 30-3 is also available on our webpage. Over the coming year, the 20-level standards documents will be revised for content and to include correlated examples.

## Postsecondary Acceptance

The latest exciting news: the University of Lethbridge is the latest institution to join the University of Alberta, University of Calgary and Mount Royal University in accepting Mathematics 30-2 for their nursing programs.

## Alberta Apprenticeship and Industry Training

Alberta Enterprise and Advanced Education have released their updated entrance requirements for apprenticeships, effective August 1, 2012. All but four trades will require a Mathematics-3 course (either Mathematics 10-3 or 20-3 will be required, with a recommendation for Mathematics 30-3). A link to a one-page summary of the entrance requirements is available at [www.tradesecrets.gov.ab.ca/news\\_announcements/pdf/Entrance\\_Requirements.pdf](http://www.tradesecrets.gov.ab.ca/news_announcements/pdf/Entrance_Requirements.pdf).

## Information Sessions on the New Mathematics 30-1 and 30-2 Diploma Examinations

Information sessions that contain the blueprints and sample items are being offered through your local Alberta Regional Development Consortium this school year. When the session is offered for a full day, participants will also have the opportunity to develop some machine-scored items for their classrooms. A session specifically for Mathematics 30-2 and the research project will also be offered. Contact your consortium for session dates.

## Diploma Examination Support Documents for Mathematics 30-1 and 30-2

*Information Bulletins and Assessment Standards and Exemplars* were posted in both English and French in June. These documents contain the examination blueprints, notes for teachers, assessment standards, formula sheets and sample questions. Sample questions will also be posted on Quest A+ (<https://questplus.alberta.ca/>) in the fall of 2012.

## Approved Graphing Calculators for Mathematics and Science Diploma Examinations in 2012/13

The document *Approved Calculators for Mathematics 30-1, Mathematics 30-2, and Science Diploma Examinations in the 2012-2013 School Year*, including the proper clearing instructions can be found at [www.education.alberta.ca/admin/testing/diplomaexams/exambulletins.aspx](http://www.education.alberta.ca/admin/testing/diplomaexams/exambulletins.aspx).

## Teacher Involvement for Provincial Assessment Working Groups

Teachers who would like to be on the committee list for the 2012/13 provincial assessment working groups should submit their names to their principal (who forwards it to the superintendent). Nominations are accepted throughout the school year, and there will be numerous opportunities to write items, validate field tests and validate diploma examinations.

*Kris Reid*

## PEC Report

Last spring we heard much about the no-zero policy that caused such uproar not only in Edmonton and Alberta but across the country. We received e-mails accusing us of not supporting our members and not being vocal enough on the issue. On the policy question, the Association believes that assessment and evaluation are the primary responsibility of the individual teacher, and to that extent we are not favourable to blanket policies across schools or school jurisdictions that do not reflect the individual learning environments. Furthermore, we also believe that the primary purpose of student assessment and evaluation is to facilitate learning.

Ultimately, teachers use a variety of methods to assess student progress, so the use of a zero grade in assessments should be decided in light of the overall purpose of assessment. However, directives to teachers issued by a school board or principal are deemed to be lawful orders, and teachers are obligated under the *School Act* to comply with lawful orders of the board. ATA policy positions are not sufficient grounds for teachers to reject a lawful order. The ATA's role is to provide advice and to make representations on behalf of teachers when necessary and requested. ATA staff will provide advice and information on different options and, if requested, help teachers through the steps they wish to follow. We ensure that teachers facing an employment matter receive the support and the due processes to which they are entitled.

*Carol Henderson, PEC Liaison*

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## Executive Meeting Summary

On May 5, 2012, the executive welcomed Kris Reid as the incoming Alberta Education representative and thanked outgoing representative Christine Henzel for her years of service. Bebe Vocong, English as a Second Language president, was introduced as an observer. The executive members presented reports from several PD activities that they had attended; for example, Alberta Colleges Mathematics Conference and North South Dialogue in Mathematics, NSCM, NCTM, Spring PDAC and "Promise and Peril: The Impact of Technology on Children, Schools and Communities." Time was spent planning the 2012 annual conference, to be held at Jasper Park Lodge in October. After working out a few problems, registration and credit card transactions for future symposia and conferences will be done online with Event Wizard and Beanstream. Executive members attended ARA and Summer Conference.

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Mathematics of Planet Earth 2013 ([www.mpe2013.org](http://www.mpe2013.org)) invites you to enter a competition to design virtual or physical museum-quality exhibits (modules) ([www.mpe2013.org/competition](http://www.mpe2013.org/competition)).

The competition will provide open source material on the Web that can be used by museums and schools around the world. The submitted modules will form the basis of a permanent virtual exhibition.

The deadline for submissions is December 20, 2012. The first, second and third winning modules will receive respective prizes of US\$5,000, US\$3,000 and US\$2,000, to be awarded on March 5, 2013, at the UNESCO Headquarters in Paris.