Mathematics Council NEWSLETTER

The Alberta Teachers' Association

Volume 25 Number 1 October 2006

President's Message

Dear MCATA Members

A few weeks ago I was talking to a retired teacher. "Even though I'm retired now," she said, "the beginning of school is always the real New Year's Day for me." I think this is true for most of us. The excitement of starting afresh, the nervous butterflies, wondering what kind of class I will have this year, buying new school supplies and new clothes for school—the New Year's Day that comes in January is nothing compared to the excitement of a new school year.

A new year is also a time for making resolutions. I encourage you to make mathematical resolutions this year. Here are some suggestions:

1. Mentor a new teacher in math. Encourage him or her to plan with you, to drop in to a math class when they have a prep. Discuss their puzzlements with them.
2. Encourage all students, not just the weak ones, to use manipulatives to demonstrate their understanding.
3. Expect all students to explain their reasoning on a regular basis.
4. Allow enough time for students to explain their thinking to their peers.
5. Resist the temptation to give the quick "right" or "wrong." Ask how the student could prove his or her thinking another way.
6. Revel in the joy of watching students suddenly understand a concept they have been struggling with.
7. Enjoy the fun of math!

This year, I have the pleasure of teaching math to a Grade 5/6 class. As a principal, I find this the most enjoyable part of my day.

—Janis Kristjansson

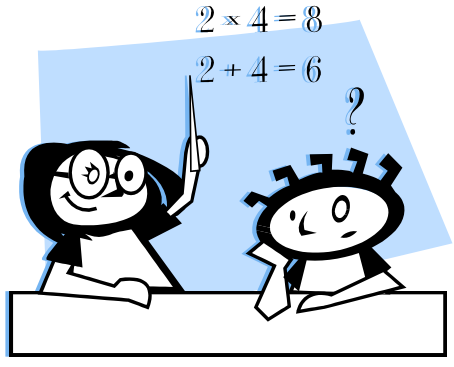
From the Editor's Pencil

I hope that everyone is glad to be back at school for another year and that you are all planning to attend the MCATA conference in Jasper. Those of you who were in Jasper the last time may recall what an amazing time we all had. This conference looks like another outstanding event. If you haven't already sent in your registration, you'll find a form inside.

In this issue there is an article called "Mathematics or Semantics?" It poses an interesting question, and MCATA would like to hear what you think. The importance of language in communication is undeniable, and this problem shows how the interpretation of the words can make a difference in how a problem is solved. Is there really room for misunderstanding?

Does the language we use really make a difference in how our students understand? I know that in my class each year we have a discussion about the difference between two numbers. Grade 2 and 3 students will say that the difference between 3 and 7 is that 3 has curved lines and 7 has straight ones. Hmmm. One difference, to be sure, but mathematically, it takes on a whole other meaning.

E-mail me at anne.macquarrie@shaw.ca and let me know your thoughts.



Alberta Education Update

Curriculum Branch

Optional implementation of the revised K–12 programs of study is set to begin in September 2007 according to the following schedule.

	2007	2008	2009	2010	2011	2012
Optional	K, 1, 4, 7	2, 5, 8	3, 6, 9			
Provincial		K, 1, 4, 7	2, 5, 8	3, 6, 9, 10	11	12

Revisions to the K–9 school programs of study have been completed, and revisions to the high school programs of study are under way. Superintendents will nominate teachers to review and provide feedback on a working draft of the Grades 10, 11 and 12 programs of study in October 2006 and again in spring 2007 after further revision. An online survey will be conducted in spring 2007 for those who were not nominated to attend the face-to-face sessions.

Additional information can be obtained on the Alberta Education website, in *Connections* online and at many teachers' conventions. For more information contact Jennifer Dolecki at jennifer.dolecki@gov.ab.ca or (780) 427-5628. (For toll-free access in Alberta, dial 310-0000 first.)

Learner Assessment

- The fall mathematics student projects, teacher notes and sample solutions were mailed to schools in August. The student projects and teacher notes will also be posted on our website (go to www.education.gov.ab.ca, click on Kindergarten to Grade 12, then Testing, then Diploma Examinations, then Projects for the Pure and Applied Mathematics 30), while the sample solutions, which are secured, will be posted on the extranet.
- The information bulletins for all subjects will be posted on the website (go to www.education.gov.ab.ca, click on Kindergarten to Grade 12, then Testing, then Diploma Examinations, then Information Bulletins). For both Pure and Applied Mathematics 30, the curriculum standards and example questions are now in the archived bulletin information, while the other sections (examination specifications, directing words, formula sheets and calculator policy, etc) are in the specific school year information bulletin. In the future, the only changes will be in the specific school year information bulletin.
- The *Released Items* document for both Pure and Applied Mathematics 30 will be mailed to schools in early October. These documents will not be posted electronically.
- Assessment highlights will be posted on the Alberta Education website in early September.
- Some dates to be aware of:
  September 2006: Registration for first-semester unit and year-end field tests
  October 2006: January 2007 marker nominations
  February 2007: Registration for second-semester field tests
  March 2007: June 2007 and August 2007 marker nominations

French Language Services Branch

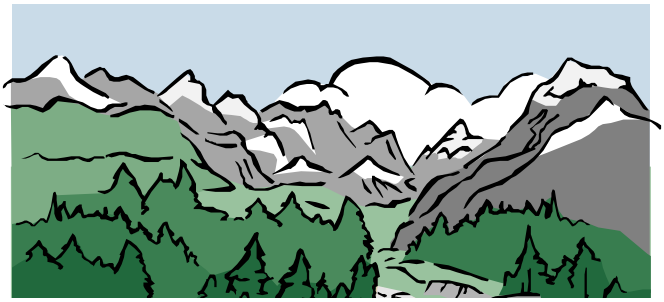
Vivian Abboud has accepted the position of Program Manager K–12 Mathematics at French Language Services Branch. Vivian was seconded to Alberta Education from Edmonton Public Schools in September 2005 as Curriculum Manager K–12 Mathematics (French). In the past year, Vivian has played an important role in the development of French language professional development resources to support junior high mathematics teachers, the development of the Western and Northern Canadian Protocol *Common Curriculum Framework for K–9 Mathematics* and the development of a call for proposals for French language K–9 mathematics resources.

Get to Know Your New MCATA Executive Member

Carmen Wasylynuik is a junior high math teacher at Barrhead Composite High School in Barrhead. She received her bachelor of education from the University of Alberta and has taught kindergarten through Grade 12 in various parts of northern Alberta. Her 11 years of teaching have included leadership and planning in AISI projects as well as mentoring new teachers in junior high math.

Conference 2006

"Pathways to Understanding"
October 19–21
Jasper Park Lodge, Jasper



Have you registered for the 2006 conference yet? The Jasper Park Lodge is a beautiful location for this exciting fall conference! Descriptions of conference sessions and registration information are now available on the MCATA website at www.mathteachers.ab.ca.

Those of you who are mathematics leaders in your schools are welcome to attend the leadership symposium that will take place on Thursday, October 18, at the Jasper Park Lodge. This is a full-day, in depth seminar that brings lead teachers together in discussion.

Keynote Speakers

Opening Keynote

John Mason, Centre for Mathematics Education, Open University, UK

Keynote Topic: "Directing Attention in Mathematics Classrooms"

John Mason is a long-time math educator who for 15 years has led the Centre for Mathematics Education at the Open University in the UK. His *Thinking Mathematically* (Addison-Wesley, 1982), coauthored with Leone Burton and Kaye Stacey, has become a classic. Translated into four languages, it is used internationally with advanced high school students, prospective schoolteachers and undergraduates in courses that invite students to think about the nature of doing and learning mathematics. *Learning and Doing Mathematics* (MacMillan, 1988) was originally written for Open University students and then modified for students entering university generally.

Mason's other interests include the study of how authors have expressed to students their awareness of generality, especially in textbooks on the boundary between arithmetic and algebra, and ways of working on and with mental imagery in teaching mathematics. His book *Practitioner Research Using the Discipline of Noticing* (Routledge-Falmer, 2001) is one manifestation of a lifelong collection of tactics and frameworks for informing the teaching of mathematics.

Closing Keynote

Edward Burger, Department of Mathematics and Statistics, Williams College, Massachusetts

Keynote Topic: "Coincidences, Chaos, and All That Math Jazz"

Edward Burger is Chair and Professor of Mathematics at Williams College in Massachusetts. His research interests are in number theory, and he is the author of over 30 research articles, three books and five CD-ROM virtual-video texts. Burger was awarded the 2000 Northeastern Section of the Mathematical Association of America's (MAA) Award for Distinguished Teaching and the 2001 MAA Deborah and Franklin Tepper Haimo National Award for Distinguished College or University Teaching of Mathematics. In 2002–2003 he was the Ulam Visiting Professor at the University of Colorado at Boulder, where he was awarded the 2003 Residence Life Teaching Award. Burger is an associate editor of *American Mathematical Monthly*. The MAA named him the 2001–2003 Pólya Lecturer. In 2004 he was awarded the MAA's Chauvenet Prize.

Review and Feedback: Working Draft of the Revised Grades 10–12 Curriculum

Alberta Education is offering a working session to allow teachers an opportunity to discuss and provide feedback on a working draft of the revised Western and Northern Canadian Protocol (WNCP) *Common Curriculum Framework* (CCF) for 10–12 Mathematics. Participants will be asked to consider the advantages and disadvantages of the proposed structure for high school mathematics, to provide feedback on the proposed content, and to evaluate outcomes and achievement indicators in the draft.

Preregistration for this session is required by October 12. Lunch will be provided for preregistered participants. To register please contact Kelli Stokes by e-mail at kelli.stokes@gov.ab.ca or by telephone at (780) 422-3274 (for toll-free access in Alberta, dial 310-0000 first). When session registration is confirmed, an advance copy of the working draft will be provided electronically.

For more information on keynote speakers and conference sessions, please see www.mathteachers.ab.ca.

Conference Invitation

The University of Alberta welcomes alumni, mentor teachers and prospective graduate students to the hospitality room at the Jasper Park Lodge, on Thursday, October 19, 2006, between 8:00 and 9:00 PM.

Get Involved!

- Nominate a promising graduate in mathematics education for the Dr Arthur Jorgensen Chair Award.
- Nominate a colleague who has demonstrated leadership in mathematics education for the Mathematics Educator of the Year Award.
- Apply for an MCATA professional development grant.
- Submit an article to MCATA's refereed journal, *delta–K*.
- Present a session at MCATA's annual conference.

Further details about each of these items are available on MCATA's website at www.mathteachers.ab.ca.

Spring Symposium a Big Success

MCATA's annual spring symposium took place on May 5, 2006, at the Calgary Winter Club. Dr Elaine Simmt, University of Alberta, involved participants in a variety of activities designed to challenge the all-too-common view that algebra is nothing more than rote symbolic manipulation. By focusing on the progression of algebraic understandings through the K–12 curriculum, she emphasized a broader view of algebra—one that has relevance for teachers at all levels.

Dr Simmt's success was evident in the glowing reviews she received from teacher leaders in diverse areas of mathematics education.

Mathematics or Semantics?

Here is the question.

John has some money. Susan has an amount that is three times greater than John's. Together they have $16. How much money does John have?

$n + 3n = 4n = \$16$
$n = 4$
John has $4

If you agree with the solution, here are four math translations of a different example that are in line with Alberta Education's interpretation.

1. A baby bear has a mass of 58 kg. A sheep has a mass two times greater. What is the mass of the sheep?
   $2 \times 58 = 116$
2. A bear has a mass of 58 kg. A sheep has a mass 1.5 times greater. What is the mass of the sheep?
   $1.5 \times 58 = 87$
3. A bear has a mass of 58 kg. A sheep has a mass 1 time greater. What is the mass of the sheep?
   $1 \times 58 = 58$—but 58 is not greater than 58.
4. A bear has a mass of 58 kg. A sheep has a mass ½ times greater. What is the mass of the sheep?
   $\frac{1}{2} \times 58 = 29$—but, similarly, 29 is not greater than 58!

Here is a parallel example, using money.

If one had $100, 2 times *greater than* would be $200; 1½ times *greater than* would be $150; and 1 time *greater than* would be $100. However, isn't $100 equal to $100, not greater than?

It becomes clear that we should stop using *greater than*, and say what we really mean. Two times *as much* would mean $200; 1½ times *as much* would mean $150; 1 time *as much* would mean $100; and ½ times *as much* would mean $50.

Using this interpretation, the bear questions with *greater than* produce much different solutions.

#1 becomes $58 + 2 \times 58 = 174$, or $3n$
#2 becomes $58 + 1.5 \times 58 = 145$ or $2.5n$
#3 becomes $58 + 1 \times 58 = 116$ or $2n$
#4 becomes $58 + \frac{1}{2} \times 58 = 87$ or $1.5n$

Which one is right? Please send your votes to anne.macquarrie@shaw.ca, and put "Mathematics or Semantics" in the subject box.

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