Mathematics Council
NEWSLETTER
The Alberta Teachers' Association

From the Editor

Are We Ready for the Challenge?

Quo vadis (whither goest thou)? It's a simple enough question, but one that governs our past, concerns our present and controls our future. It's a simple enough question, but one that too often goes unanswered or is answered in only the past tense--"This is where we have been."

Personal development self-analysis programs tell us to proact, not just re-act. And yet most of us continue simply to exist, showing the same degree of control over our destinies as the weed that slowly turns to follow the sun until it is killed by the first frost. In an ever more complex and demanding world, we consider most days a success by simply coping with the immediate demands of family and work. Who has the time or the expertise to "family goal set" or "career self-assess?" These trendy concepts sell thousands of tapes and pocket-books that usually wind up in the next garage sale when the euphoria of the weekend "power seminar" wears off.

During MCATA's earlier decades of growth and achievement, the status quo was not only adequate but also justified by our success. Quo vadis could easily be answered retrospectively. After all, MCATA was likely the fastest growing council. Its publications and conferences gained renown provincially, nationally and internationally. "Here is where we have been and where we have succeeded; therefore, here is where we are and where we are going to be." However, of late, MCATA has been battling to maintain its membership and prominent position. The status quo is no longer adequate, and no one, least of all the executive committee, seeks to justify it. We are now struggling to bring to bear all the self-assessment and other human resource tools used in the workplace to ensure the continued success of our superior council.

No quick-fix solutions exist. MCATA's challenge is to get members involved instead of simply informing them of the problem without the participation of many of our members, any master plan for bringing new life to our council will be doomed from the start. We cannot continue to accept the complacency of lack of involvement. The general membership's willingness to allow a small circle of members to determine not only the answers but also the process of asking the questions concerning MCATA's future is itself cause for great concern. Some describe this lack of involvement as blind faith in the leadership. While superficially comforting, this analysis quickly breaks down in the face of the

widespread member ignorance of what, in fact, the Council's goals and objects are and what services it provides. We continue to turn blindly toward the "warm source" while the first real frost of winter comes ever closer.

This widespread ignorance is coupled with a more disturbing and growing disaffection with the process itself, quite apart from the product. Allowing the few to set the agenda for the many will create the possibility that the personal visions of the few will become the reality for the many. Members, having not proacted, will react and speak with their feet, quietly leaving a council that has quit meeting their needs.

An old cliché says perception is reality. MCATA's reality is that unless the leaders ensure that the members perceive themselves as part of the process, they become part of the problem. At the same time, the leaders find it frustrating acting in a vacuum. Members must inform their leaders what they want. Do they want more specific information related to curriculum and the teaching process? Do they want more local workshops? And . . . ?

Take an active role in your council. Organize a local workshop; make a presentation at the annual conference; write an article for delta-K; or submit an interesting problem or story for the Newsletter. Let's make MCATA number one. Perhaps Pogo said it best: "We have met the enemy and they is us."

From the President's Pen

Bob Hart

Another school year has begun. I hope you had a good summer and are recharged and excited to be back!

A number of successful mini-conferences have occurred since the last newsletter. Over 300 participants a^ ^ ided _hree mini-conferences in Calgary during May, and one mini-conference was held in Grande Prairie on May 23.

I represented MCATA at the NCTM leadership conference in Calgary in July. Twenty-one participants from across Canada shared ideas and publications and discussed restructuring our mathematics associations for the '90s and developing innovative leadership programs.

Executive members Wendy Richards, Doug Weisbeck, Craig Loewen, Art Jorgensen and I attended the ATA Summer Conference in Banff in August. It is always an excellent time to work with the ATA staff officers and other specialist council executive members.

Meet mathematics teachers and participate in useful sessions at this year's annual conference in Medicine H : on ^ovember 5 to 7. Register early. Proposed constitution changes will be discussed at the annual meeting.

The Mathematics Council has close to 800 members. There are lots of mathematics teachers who can benefit from membership in this council. Pass this newsletter along to your colleagues. I look forward to meeting you in Medicine Hat in November.

NCTM Conference

NCTM's 71st annual meeting will be held in Seattle from March 31 to April 3, 1993. As usual, an excellent program is being planned. This is the closest the conference will be to Alberta for many years. For a great experience, start planning now to be a part of this special occasion.

Three Teachers + One Book + 108 Games = Success

Cam Tait

Learning math has never been so much fun. Three local teachers--Jane Felling, Joanne Currah and Cheryl MacDonald--are dealing cards and rolling dice to help children learn to add, subtract and multiply. Their book, <u>Box Cars and One-Eyed Jacks</u>, outlines 108 games that help K-4 students who are having difficulty with math. It complements the basics taught in math classes in schools.

"We worked in a special education class where we saw kids becoming frustrated with math," says Felling. "We began playing games with cards and dice. Then the parents started playing games with the kids and it snowballed from there." But the thing is that kids are learning math, and they're having fun. "It's a lot easier for kids to learn math through games rather than being sent to the resource room," says Felling. "It's good to see kids, who have been frustrated, laughing and succeeding in math. And parents could play these games with their kids and have fun." Felling first wanted to do something four years ago when she was teaching Grade 2 in Leduc. Four of her students were repeating the grade and were really frustrated with math.

The teachers started with something simple and familiar ''' War, the card game where the person with the highest card wins. "But we got the kids to add two cards together, rather than playing with just one card," says Felling. "And it was so neat to see them succeed with math--rather than hate it." The games also include graphics, where the kids have to color a space after they've added the value on the dice. "We also play golf with dice, where the kids try to get 18 holes by rolling the dice and adding them together."

The book, which is gaining recognition, won the National Learning Disabilities Idea Award. Three thousand copies have been sold throughout western Canada, and the authors have been invited to conduct workshops in the United States. "We are planning to go to several schools and play the games with the students. We work with gifted students and students in special education classes," says Felling.

<u>Box Cars and One-Eyed Jacks</u>, Volume II, will be available in October and is intended for students from Grades 4 to 9.

For further information, call 450-1988.

Reprinted with permission from <u>The Edmonton Journal</u>, August 28, 1992.

Get Real with *Math Moves*

Real examples can go a long way toward real learning. By applying manipulatives to symbols, Math Moves easily demonstrates computations, presents algorithms and illustrates equation solving.

Math Moves introduces abstract concepts in mathematics to students with easy-to-understand demonstrations in the real world. It is particularly helpful in the junior high curriculum where students are required to leap into number theory and abstract mathematical thinking. Manipulatives are valuable tools that help move students' thinking from concrete to abstract operations.

These 30-minute videos introduce topics and enhance student comprehension through the use of base 10 blocks, checkers, cylinders, pattern blocks, computer graphics and animated sequences. Teachers unfamiliar with the use of manipulatives for demonstrating concepts at the junior high school level will find Math Moves a valuable resource for themselves and their students.

Objects are manipulated by a demonstration teacher, and computer graphics and animation are used extensively. Each program has a modular structure, encouraging interactive learning by prompting students to stop the tape and solve an assignment after each information segment. Once the problem is solved, they resume watching to discover the correct answer and move on to the next segment. These programs support the curriculum and serve the home-study needs of distance education students as effectively as they do the needs of learners in traditional teacher-directed classrooms.

BPN 3373

01 Number Theory. Base 10 materials illustrate factors, prime and composite numbers, powers and square roots.

02 Adding and Subtracting Fractions. Colored counters demonstrate the addition and subtraction of integers.

03 Multiplying and Dividing Fractions. Colored counters introduce the multiplication and division of integers.

04 Integers. Cylinders and colored counters illustrate computation involving positive, negative and zero integers.

05 Equations. Finding the solution to equations with one step is examined using two-colored cylinders, counters and a balance for demonstration.

06 Equations. Finding the solution to equations using more than one step is explored using two-colored cylinders and a balance to promote understanding.

To order Math Moves, or to preview one program from the series on "Night Owl," contact the Media Resource Centre at 256-1100 in Calgary or 1-800-352-8293 outside Calgary. A teacher's guide is available.

Math and Science Action Forum

The New Brunswick Department of Education is hosting an action forum in March 1993 to enhance student participation in mathematics and science at all grade levels by providing a showcase of successful projects and programs.

We are interested in hearing about the increased achievement and/or involvement of your students in mathematics or science as a result of a project or program. We know that many exemplary programs go unrecognized and unshared. Don't let yours be one of those! Should you be involved in, or aware of, such a project or program, contact Carolyn Jones, Cochair Program Committee, phone (506) 459-5109; or Wayne Tingley, Cochair Program Committee; phone (506) 453-5454.

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Genius means little more than the faculty of perceiving in an inhabitual way.

—William James

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News Brief

The University of Illinois at Chicago-Maneuvers with Mathematics project (UIC-MWM) recently revised four field-tested, middle-grades mathematics books for publication. Maneuvers with Angles, Maneuvers with Rectangles, Maneuvers with Triangles and Maneuvers with Nickels and Numbers are hands-on, calculator-intensive materials that take students into the heart of geometric and quantitative topics that are integrated with other content areas such as geography, science and language arts. These student lab books, along with corresponding teacher sourcebooks, are available through Dale Seymour Publications. A recently pilot-tested book, Maneuvers with Circles, is available through UIC-MWM, Box 4348 (m/c 249), Chicago, IL 60680-4348; phone (312) 996-8820. UIC-MWM is funded with a major grant from the National Science Foundation.

Student Projects Wanted

The Student Projects' Committee for NCTM's 1993 annual meeting in Seattle invites you to submit descriptions of student projects for display at the meeting. Please send the following information, not the actual projects, by February 1, 1993, to Dorothy Martin, 12721 NE 172 Lane, Woodinville, WA 98072:

* Type of project (for example, flat artwork, video, slides, 3-D, other)
* Estimated size of project (area of wall space needed, number of carousels, table space and so on)
* Grade level of students
* Assignment that gave rise to the project

You will be notified if your project is accepted. Transportation and the cost of transportation is each participant's responsibility.

Announcements

Ohio State University
Department of Mathematics
231 West 18 Avenue
Columbus, OH 43210-1174

The Fifth Annual Calculator and Computer Precalculus (C^2PC) Teachers' Conference and the Second Annual CalcNet and TRANSIT Teachers' Conference (known collectively as T^3--Teachers Teaching with Technology) will be held at the Ohio State University on December 11 and 12, 1992. Only a hands-on T1-85 workshop will be held on Sunday. The $90 registration fee includes two nights' lodging (share double), meals (beginning with Friday dinner and concluding with Saturday dinner), materials, handouts and a T-shirt. The conference is open to all interested persons, even if they have never participated in C^2PC, CalcNet or TRANSIT. For additional information and an application, contact Sherrie Lowery, T^3 Teachers' Conference, Department of Mathematics, Ohio State University. Application deadline: November 1, 1992.

1993 Summer Precalculus Institute (C^2PC), July 5 to 9 and July 12 to 16, 1993. The Ohio State University is offering two intensive one-week summer institutes for high school teachers on using graphing calculators to enhance the teaching and learning of precalculus mathematics. Participant stipends are available. For further information and an application, write to Franklin Demana and Bert K. Waits, 1993 C^2PC Summer Institute, Department of Mathematics, Ohio State University. Application deadline: March 15, 1993.

1993 Summer Calculus Institute (C^3E), June 28 to July 2, 1993. The Ohio State University is offering an intensive one-week summer institute for high school teachers on using graphing calculators to enhance the teaching and learning of calculus. Participant stipends are available. For further information and an application, write to Franklin Demana and Bert K. Waits, 1993 C^3E Summer Institute, Department of Mathematics, Ohio State University. Application deadline: March 15, 1993.

1993 Summer Two-Week Calculus Institute (CalcNet), July 19 to 30, 1993. Sam Houston State University is offering a two-week intensive summer institute for high school mathematics teachers on using graphing calculators to enhance the teaching and learning of advanced placement calculus. Participant stipends and some travel support are available. For further information and an application, write to Greg Foley, 1993 CalcNet Summer Institute, Division of Mathematical and Information Sciences, Sam Houston State University, Huntsville, TX 77341-2206. Application deadline: March 15, 1993.

TRANSIT. The Ohio State University invites applications for an NSF project to establish school/university teams as regional technology centres. Regional team training will be provided through summer inservice sessions and academic year follow-up conferences. Local living expenses with stipend support for precollege team members is available. Regional teams will help create and/or revise inservice training modules. Regional centre teams will begin training teachers as school technology specialists during summer 1994 at the regional sites. Write TRANSIT, c/o Franklin Demana and Bert K. Waits, Ohio State University, Mathematics Department. Application deadline: February 15, 1993.

If you have any questions about these announcements, contact Sherrie Lowery a. (614) 292-7223.

Council of Ministers of Education, Canada
School Achievement Indicators Program

A Memorandum of Understanding (MOU)

This program is bound to have a significant effect on all who teach students mathematics and/or English. The Memorandum of Understanding outlines how the program is to be implemented.

The provincial and territorial ministers of education agree to undertake the School Achievement Indicators Program (SAIP), which has the following objectives:

* To provide data that will assist each province and territory in making policy decisions, setting education priorities and planning program improvement, while respecting the autonomy of provinces and territories in matters of education

* To collect the following information, which will help determine the effectiveness of our education systems:

  1. Achievement levels in reading, writing and mathematics of 13- and 16-year-olds, which show how well students of those ages are performing
  2. Participation and graduation rates, which show the extent to which young people are taking advantage of education opportunities and receiving graduation diplomas or certificates

* To report in a manner that clearly informs Canadians of the information gathered concerning reading, writing and mathematics and of the procedures by which the program was conducted, and also provides a possible informat.... base for discussion leading to curriculum improvement at the provincial or territorial level

To facilitate the development and reporting of indicators of student achievement, the members of the Council of Ministers of Education, Canada (CMEC) agree to the following:

1. All provinces and territories will actively participate in all phases of the program.

2. A commitment is made to ensure that the assessment techniques re pond to current pedagogical practice. The assessment instruments will include some examination of students' best work in writing, students' personal/reflective responses to reading and performance of problem solving in mathematics.

3. The development of assessment instruments will incorporate a process that ensures that the assessment instruments are as much as possible in keeping with the curriculum requirements and orientations of the provinces and territories. Each jurisdiction will establish procedures for reviewing potential test items for relevance to its curriculum, for gender and culture bias or stereotyping, and for other necessary quality and validation components.

4. A core sample in each province or territory will be selected through a pro-
    cess that is sensitive to its demographic makeup, among other variables. A
    jurisdiction may decide to draw core samples for both official languages.

5. A framework will be developed to allow the inclusion of additional sample
    groups to accommodate the different interests of each province and territo-
    ry. Additional resources needed to meet the special requirements of indi-
    vidual jurisdictions will be the responsibility of those jurisdictions.

6. The following procedures will be used to ensure that the assessment instru-
    ments are free from cultural and gender bias and stereotyping so that all
    sectors of the population are fairly treated:

    --The development teams will use specialists in recognizing stereotypes and
      bias to review all assessment materials intended for student use.
    --Provincial and territorial ministries will review all materials.
    --Student and teacher feedback will be collected during field testing.
    --Appropriate means will be used to ensure parental and interest group feed-
      back.
    --At the reporting stage, any items showing bias will be discarded.

7. The process for report development will include a mechanism for provincial
    and territorial approval and will address particular concerns about the use
    and dissemination of results and the agreements in the memorandum regarding
    curriculum and sampling issues. The initial specifications for reporting
    will be developed by the Report Development Group, which includes membership
    from all provinces and territories. The Policy Advisory Committee (PAC),
    composed of deputy ministers from all jurisdictions, will approve the
    specifications for reporting by September 1992. Subsequent changes must
    also be approved by the PAC. The CMEC will not report or make accessible
    data at the board, school, teacher or student levels.

8. T⸱ is intended that the cost of the items contained within this MOU will be
    met from the existing budget of the SAIP. However, if an expanded core sam-
    ple is required, further funds would be made available.

9. Work plans will respect the report date of fall 1993, while allowing for
    flexible scheduling of field testing in any jurisdiction that requires addi-
    tional time for thorough consultation. Consultation within a jurisdiction
    is the responsibility of that jurisdiction.

10. Consideration will be given to expand the present, short- and long-term com-
    munication strategies for the program.

11. The Ontario Ministry of Education is invited to participate in the Consorti-
    um. All provinces and territories will have the opportunity to contribute
    to the item pool for the assessment instruments.

    All key decisions related to the SAIP are subject to review by the Policy
Advisory Committee, a committee of deputy ministers from all the provinces and
territories and, ultimately, by the Council of Ministers of Education, Canada.

RESEARCH ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ CLIPS

USING COMPUTERS TO THINK WITH SYMBOLS

In 1943 the Chairman of the Board of IBM declared "I think there is a world market for about five computers." In 1977 the President of Digital Equipment Corporation stated "There is no reason for any individual to have a computer in their home." Around that time, "computer-based instruction" meant that the computers programmed the students, who sat at a terminal engaged in mechanical, boring, drill-and-practice. Not any more. Students are beginning to use them as tools for their own explorations. Two issues of the *Journal of Mathematical Behavior* focus on the use of a flexible computer language, Boxer, with middle school and high school students.

If one car is moving at constant velocity and a second is accelerating uniformly, can one pass the other and then fall behind? You can program their motion and test your ideas yourself. Or, consider this task: "Draw a picture of this story: A motorist is speeding across the desert, and he's very thirsty. When he sees a cactus, he stops short to get a drink from it. Then he gets back in his car and drives slowly away." In "Inventing Graphing" some sixth graders start with some very rough pictures, and keep making changes to capture the information they want. Ultimately, they invent "position-versus-time" graphs before having had formal instruction in the topic.

How does the genetic code work? A DNA sequence is, in reality, a detailed set of instructions that "specifies" a protein. A sixteen year old high school student writes a program that mimics the DNA translation process. Given a segment of DNA, the program converts the segment to RNA, and then to a protein.

Mathematics is a symbolic language, and these examples show that students can learn to use and invent symbols in the ways mathematicians do.

References

Special Issue: Boxer! (April 1991) *Journal of Mathematical Behavior*, Volume 10, Number 1.

DiSessa, A., Hammer, D., & Sherin, (August 1991) Inventing Graphing: Meta-representational expertise in children. Journal of Mathematical Behavior, Volume 10, Number 2.

Clip prepared by the Research Advisory Committee of the National Council of Teachers of Mathematics.

RESEARCH ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ CLIPS

COMPUTERS IN SCHOOL

John R. Anderson, a cognitive psychologist at Carnegie Mellon University, has created some major computer tutoring programs that have been tested in the Pittsburgh, Pennsylvania Public Schools (Anderson, Boyle, & Yost, 1986). These programs are unusual in several ways. To begin with, they spring from an unusual motivation. Anderson began by developing his own theory of human cognition (Anderson, 1983). He then decided to put this theory to the most practical tests he could devise, and settled on trying to create computer tutoring programs to improve the teaching of various portions of mathematics and computer science. Among the tutors that he has developed are a tutor for ninth-grade algebra, and a computer program to tutor students in the process of making original proofs in tenth-grade Euclidean plane geometry (Anderson, Boyle, & Yost, op cit.). This geometry proof tutor has been the most successful of all of his tutoring programs, and is the one on which we report here.

The geometry proof tutor uses a new notation for writing proofs that is simpler than the usual two-column format, and seems to capture the nature of the argument much better, so that one sees more clearly how the various ideas fit together (Anderson et al., 1986). Many aspects of the tutoring program have been carefully studied, including student achievement, student moral, resulting changes in the nature of a student view of what geometry is all about (Anderson, Bellezza, & Boyle, in press), and especially changes in the role of the teacher. Although given no specific instructions on how to react, teachers using the Tutor have been found to make an independent decision to spend more time with the less able students. This appears to result from the facts that, using the Tutor, more able students can move ahead on their own, and teacher assistance to the less able can be carried out with greater privacy when every student is busy at a computer (Schofield & Evans-Rhodes, 1989).

References

Anderson, J.R. (1983). *The Architecture of Cognition*. Cambridge, MA: Harvard University Press.

Anderson, J.R., Bellezza, F.S. & Boyle, C.F. (in press). *Rules of the mind*. Hillsdale, NJ: Erlbaum.

Anderson, J.R., Boyle, C.F., & Yost, G. (1986). The geometry tutor. *Journal of Mathematical Behavior, 5*, 5-19.

Schofield, J.W., & Evans-Rhodes, D. (1989). Artificial intelligence in the classroom: The impact of a computer-based tutor on teachers and students. In: Bierman, D., Breuker, J. & Sandberg, J., Eds., *Artificial intelligence and education*. Amsterdam: IOS.

Upbeat Posters!

Two series of teaching aide posters are available to secondary school teachers: "I Can Do Math" and "Math Tips." Offered by educational poster publisher Robert Jacobson: Design, these bold upbeat posters provide encouragement and can be easily read from across a room.

To receive an illustrated brochure, call 1-800-441-8558, or write to Math Posters, Robert Jacobson: Design, Box 8909, Moscow, ID 83843.

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Statistics show that 28 percent of North Americans are overweight--a case of the minority being bigger than the majority.

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NCTM Briefs

Whether this is your first or 30th year in the classroom, you can become a better mathematics teacher by joining the National Council of Teachers of Mathematics (NCTM). Why? Because NCTM is the major <u>international</u> organization devoted specifically to the interests of mathematics teachers, teacher educators and students. Other educational organizations represent teachers from a variety of academic disciplines. An NCTM membership complements your MCATA membership.

The NCTM and the MCATA are professional organizations of teachers who are dedicated to improving classroom instruction in mathematics at all grade levels. Through their publications, these organizations provide a forum for sharing new developments and innovative classroom experiences and for evaluating trends in the teaching of mathematics.

Your choice of the <u>Arithmetic Teacher</u> (<u>AT</u>), the <u>Mathematics Teacher</u> (<u>MT</u>) or the <u>Journal for Research in Mathematics Education</u> (<u>JRME</u>) is part of your NCTM membership. The <u>AT</u> is most appropriate for elementary and junior high school teachers. In addition to feature articles, reproducible classroom activities are included. The <u>MT</u> contains articles of interest to senior high school teachers and, occasionally, is a resource for junior high school teachers. Both are published monthly from September through May. The <u>JRME</u>, issued five times yearly, contains comprehensive reports of empirical studies, summaries of major mathematics research studies and articles about current research in mathematics education. The <u>NCTM News Bulletin</u>, distributed in September, November, January, March and May, features timely news for teachers plus "Student Math Notes," designed for easy reproduction for classroom use.

To join NCTM, complete the membership form below and mail to the National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091; phone (703) 620-9840, Fax (703) 476-2970, CompuServe 75445, 1161.

NCTM Application Form

Yes, I'd like to join the National Council of Teachers of Mathematics. I understand that annual dues include all membership services, and the journal(s) I have checked below:
☐ **ARITHMETIC TEACHER (AT)** — $40
☐ **MATHEMATICS TEACHER (MT)** — $40
☐ **JOURNAL FOR RESEARCH IN MATHEMATICS EDUCATION (JRME)** — $45

Periodical Combinations
(Individuals only; select one option)
☐ **AT & MT: $55**   ☐ **AT & JRME: $60**
☐ **MT & JRME: $60**   ☐ **AT, MT & JRME: $75**

Full-time student dues are ½ regular membership dues. For mailing outside the U.S., add $5 for the first AT or MT per membership and $2.50 for each additional AT or MT; add $1.50 for JRME. Canadians enter "U.S." after the amount on your personal checks. Dues support the development, coordination and delivery of Council services for one year, including $15 for each subscription to the AT and MT, $20 for the JRME, and $3 for an NCTM NEWS BULLETIN subscription, which includes STUDENT MATH NOTES.

SPECIAL PUBLICATIONS

1992 YEARBOOK: THE IMPACT OF CALCULATORS ON SCHOOL MATHEMATICS (Spring '92 delivery)
☐ Individual Members $14.40; ☐ Others $18.00
☐ **CURRICULUM AND EVALUATION STANDARDS FOR SCHOOL MATHEMATICS**
☐ **PROFESSIONAL STANDARDS FOR TEACHING MATHEMATICS**
Individual Members ☐ $20.00 each; ☐ $34.00 both
Others ☐ $25.00 each; ☐ $42.50 both

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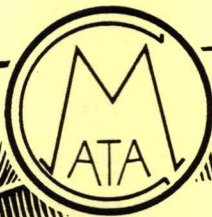**Professional Development Director**
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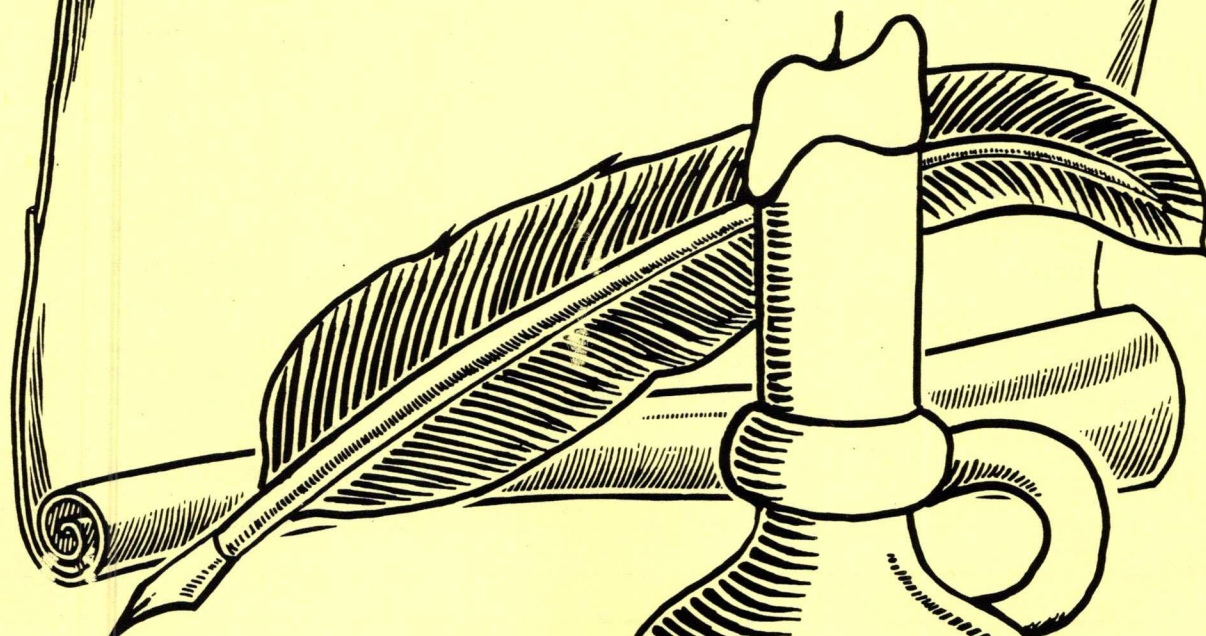Lethbridge T1K 0X6
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Math Fare

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ANNUAL CONFERENCE
November 5 – 7, 1992

* Small and large sessions for **all divisions**
* **The Fair**—a place to browse for new ideas
* Closing keynote session by **Brendan Kelly**
* **Mead and Greet**—a wine and cheese reception
* **Aftermath**—a hospitality area
* **Joust for Fun**—a medieval feast and theatrics

Thou shouldst prepare thyself to eat, drink, hear wisdoms, and in whole, make merry.

Program

Thursday, November 5—Medicine Hat Lodge

5:00- 8:00 p.m.	Registration—*locally handcrafted souvenir for all pre-registrants*
8:00- 9:00 p.m.	Welcome and Annual General Meeting
9:00-midnight	Mead and Greet—*wine and cheese reception (no host bar)*
7:00- 9:00 p.m.	Exhibits

Friday, November 6—Medicine Hat Lodge

7:00- 4:00 p.m.	Registration
8:30 - 5:30 p.m.	Exhibits
9:00-11:45 p.m.	Division—Specific Sessions *for all 4 divisions*
11:45- 1:30 p.m.	Lunch
1:30- 4:00 p.m.	The Fair—*browse at The Fair for classroom-tested ideas*
4:30- 6:00 p.m.	Aftermath—*hospitality suite*
6:00- 6:30 p.m.	Cocktails *prior to the Dinner Theatre*
6:30 p.m.	Dinner Theatre

Saturday, November 7—Medicine Hat College

7:30- 9:00 a.m.	Registration
8:30-12:30 p.m.	Workshops and Small Sessions
1:00- 2:00 p.m.	Closing Keynote Session

Socials

Mead and Greet—*a wine and cheese reception (Thursday evening)*
—a no host bar but look for complimentary drink tickets in registration suite
Aftermath—*Hospitality suite*
Medieval Feast and Theatrics—*dinner theatre—casual or period dress*

Exhibits

Various displays of the newest instructional and resource materials

Program Overview

Closing Keynote Speaker—Brendan Kelly

Other Speakers include:

Division I	Division II
Jane Felling	Jane Felling
Marilyn Harrison	Bruce Harrison
Marie Hauk	Marilyn Harrison
Art Jorgensen	Roger Harty
Craig Loewen	Mary Ann Nissen
Mary Ann Nissen	John Percevault
John Percevault	Daiyo Sawada
Evelyn Sawicki	Ann Weibe
Marion Small	
Sandra Unrau	

Division III	Division IV
Dennis Belyk	Dale Burnett
Cathy Bible	Florence Glanfield
Michelle Bilan	Jack LeSage
Dale Burnett	Mary Jo Maas
George Ditto	Terry Melnyk
Jane Felling	Robert Michie
Sue Hatch	Jacqui Penrod
Marie Hauk	Hugh Sanders
Sharon Kratky	Al Stretton
Barb Morrison	
Katie Pallos-Haden	
Barry Scully	
Stu Telfner	

Accommodation

Special conference rates have been arranged with the Medicine Hat Lodge.

Room rate: $59 plus accommodation tax and G.S.T.

To guarantee this conference rate, reserve your room 2 weeks prior to the conference.

Reservations may be made by calling: 1-800-661-8095 or Fax (403) 529-1538 or you may write to the Medicine Hat Lodge, 1051 Ross Glen Drive SE, Medicine Hat, Alberta T1B 3T8

Registration

Before October 16, 1992

MCATA members	$ 90 + G.S.T. = $ 96.30	_____
Non-MCATA members	$105 + G.S.T. = $112.35	_____
Registration + MCATA membership	$115 + G.S.T. = $123.05	_____
One day registration	$ 60 + G.S.T. = $ 64.20	_____
Student registration	$ 30 + G.S.T. = $ 32.10	_____

After October 16, 1992:

Add $10 + G.S.T. = $10.70

Medieval Feast and Theatrics

No. of Tickets

Conference
   registrants $15 (G.S.T. included) _____
Guests $20 (G.S.T. included) _____

Cancellation Fee: $20

Name _____

Address _____ Postal Code _____

School _____

Phone _____ (home) _____ (school)

Make cheques payable to: **MCATA '92 Conference**

Mail registration to: **Betty Hagemann, 3 East Glen Avenue SE, Medicine Hat, Alberta T1B 3H2**

The Mathematics Council of The Alberta Teachers' Association offers you these benefits:

Publications

- MCATA Newsletter—news, articles and special features published several times a year.
- MCATA Journal, *delta-K*—published three times a year. Features articles and ideas useful to classroom teachers and provides an outlet for Alb mathematics educators to exchange ideas.

Professional Activities

- Publishes professional journals and newsletters.
- Sponsors an annual conference.
- Encourages and assists in the establishment of regional councils.
- Promotes inservice education for improving mathematics throughout the province.
- Provides resource personnel and helps with program planning in cooperation with convention committees, regionals and other interested groups.

Membership

- **REGULAR:** Members of the ATA as specified in ATA bylaws. All such members are entitled to privileges of council membership including the ri to vote and to hold office.
- **STUDENT:** Student members of the ATA may join this council and are entitled to all benefits and services of council membership except the right to hold office.
- **AFFILIATE:** Persons who are not ATA members as specified in ATA bylaws. Such members receive all benefits and services of council membership except the rights to vote and to hold office.
- **SUBSCRIPTION:** Institution and businesses are eligible for subscription membership. Such members may receive all the benefits and services of council membership except the rights to vote and to hold office.

MEMBERSHIP APPLICATION
The Mathematics Council of
The Alberta Teachers' Association

A. Name _____

Address _____

_____ Postal Code _____

Phone (Home) _____

School or Employer _____

Grade Level, Specialty _____

Local Name & Number _____

_____

Teaching Certificate Number _____

B. Category of membership in The Alberta Teachers' Association (check one):

☐ Active   ☐ Associate   ☐ Student
☐ Life   ☐ Honorary

C. Category of membership in MCATA

☐ New   ☐ Renewal

D. Membership Fee Enclosed:
Make cheque payable to **The Alberta Teachers' Association** (check one)

Regular $25 ☐   Affiliate $30 ☐
Student $ 5 ☐   Subscription $35 ☐

Mail membership application to:

MATHEMATICS COUNCIL
The Alberta Teachers' Association
Barnett House
11010 142 Street
Edmonton, Alberta T5N 2R1