Mathematics Council
NEWSLETTER
The Alberta Teachers' Association

Volume 7 Number 4 April 1989

From the Editor

The time has come again to ask for your involvement. Do you know of a fellow professional who would make an excellent candidate for the MCATA executive? If you do, please complete the enclosed nomination form and forward it to Bob Michie. I know that many excellent prospects are out there.

Although next November may seem to be a long way off, it is not too early to think about who the 1989 Mathematics Educator of the Year will be. This prestigious award will be presented at the MCATA annual conference to be held in Lethbridge from November 2 to 4, 1989. If you know someone, and I am sure you do, who has made a significant contribution to mathematics education in Alberta over the years, please complete and mail the enclosed nomination form. Your help in selecting this person will really be appreciated.

Included in this newsletter is the MCATA's position paper on Alberta Education's proposed Achievement Testing Program. This position paper was approved by the Provincial Executive Council and forwarded to the Department of Education. The Department indicated that it would take the recommendation under serious advisement. The MCATA executive feels that it is imperative that teachers take a serious stand on this issue since it can have a profound effect on teachers and students.

At its last meeting, the MCATA executive moved to change the copyright of the newsletter and journal. Currently, anyone wishing to make copies of any of the material has to ask the ATA for permission. The MCATA executive feels that educators should have the right, and in fact should be encouraged, to make copies of the material to use with their students. Only by so doing can the material be of real practical value. Permission to copy the material will still be necessary if it is to be used for commercial or other noneducational uses.

A special thanks to you for being a member of the MCATA. Our membership is currently over 800, the highest it has ever been. During the past year, the MCATA membership has increased while other councils' memberships have declined. Please maintain your membership, and encourage a fellow teacher to join. If you know of anything that can be done to make your membership even more valuable, please do not hesitate to let a member of the executive know.

April is recognized as Mathematics Education Month. How about doing something a bit extra special with your students during the month to prove that mathematics is the most exciting and challenging subject.

--Art Jorgensen

NCTM Proclamation

Whereas, mathematical literacy is essential for citizens to function effectively in society;

Whereas, mathematics is used every day--both in the home and in the workplace;

Whereas, the language and processes of mathematics are basic to all other disciplines;

Whereas, our expanding technologically based society demands increased awareness and competence in mathematics;

Whereas, school curricula in mathematics provide the foundation for meeting the above needs;

Now, therefore, I, Shirley M. Frye, president of the National Council of Teachers of Mathematics, do hereby proclaim the month of April 1989 as

MATHEMATICS EDUCATION MONTH

to be observed in schools and communities in recognizing the increased importance of mathematics in our lives.

Achievement Testing Program

The Mathematics Council of The Alberta Teachers' Association supports the intent of Alberta Education as stated in the document "Proposed Enhancements to the Achievement Testing Program," namely that

> . . . the Achievement Testing Program shift in emphasis from that of collecting information for monitoring and program evaluation purposes to collecting information that can be used to serve the needs of students more directly.

Although the intent of the Achievement Testing Program is supported, the concerns noted below must be addressed by The Alberta Teachers' Association (ATA) in cooperation with Alberta Education.

1. Final evaluation of the student must remain the prerogative of the student's teachers.

2. School and system administrators must use the results of the program to enhance the learning opportunities of students. The Achievement Testing Program is not intended to evaluate teacher performance. The Mathematics Council anticipates beneficial results from Alberta Education's proposed inservice plan. Evaluation instruments that sample student performance in mastery of content and in process (thinking skills) are not sufficient to assess the quality of a program or the quality of instruction.

3. Alberta Education and the ATA must continually monitor the Achievement Testing Program to ensure that students individually and collectively are not negatively affected and that the increased expenditure of human and physical resources is warranted.

--Louise Frame
President

Scrabble

Arrange the following letters into mathematical terms:

1. nitoqeau _____
2. lqeau _____
3. dddnea _____
4. denrtbusah _____
5. endumin _____
6. endvidid _____
7. ductpro _____
8. wasner _____

Publications and Products

Would you like a $160 **math activity kit** for three- to six-year-old children just for the cost of shipping? The Council for Exceptional Children (CEC) is offering the kits, "Learning Mathematical Concepts," by Merle Karnes, to preschool or kindergarten teachers or parents to use at home. Each kit contains 175 activity cards featuring lessons on numerals, addition, subtraction, patterns, progressions, measurement, geometric shapes, sets and matching. Call or write for sample activity cards and shipping costs. Kits are shipped eight to a carton. For more information, contact Publication Sales, CEC, 1920 Association Drive, Reston, Virginia 22091; telephone (703) 620-3660.

KidScience, a **newsletter for elementary school teachers**, is seeking hands-on activities in mathematics and science for future issues. Activities should (1) be hands-on in nature (rather than textbook-based); (2) have specific objectives and evaluation materials, if possible; (3) develop math and science skills; (4) use commonly available materials; and (5) be suitable for use in grades K-6. Free subscriptions are offered in exchange for contributions. For more information, write to Catherine Reed, Editor, KidScience, 916 Marsh Street, Mankato, Minnesota 56001.

The Mathematical Log, a quarterly publication of Mu Alpha Theta, the mathematics club federation cosponsored by NCTM, **welcomes short expository articles, problems for consideration and related mathematical insights from adults and students.** Initial contributions should be 100 to 300 words in length, and the ideas and vocabulary should be appropriate for motivated, average and above average high school students. The Log's audience is comprised of 39,000 young readers in 1,000 school chapters. Sample copies can be obtained from the Mu Alpha Theta National Office, 601 Elm Avenue, Room 423, University of Oklahoma, Norman, Oklahoma 73019. Editorial submissions and queries can be sent to the Log Editor, H. Don Allen, St. George's School of Montreal, 3100 The Boulevard, Montreal, Quebec H3Y 1R9.

Cognitive differences, family stress, racial and cultural bias, and tracking are among the reasons proposed for the weaker performance **at-risk students in mathematics and science.** Programs that have successfully reversed this situation and ways of increasing learning through out-of-school programs are discussed in a recent digest of the ERIC Clearinghouse on Urban Education. To obtain a copy of the digest (free) or of the complete publication, Contextual Factors in Education: Improving Science and Mathematics Education for Minorities and Women ($2), wire to the ERIC Clearinghouse on Urban Education, Institute for Urban and Minority Education, Box 40, Teachers College, Columbia University, New York, New York 10027; telephone (212) 678-3433.

Mark Your Calendar!

April 14 and 15, 1989, are the days of the annual Gifted and Talented Education Council Conference to be held at the Westin Hotel, Edmonton. The theme is "Lifelong Learning: Guiding the Gifted into the '90s."

1989 MCATA Conference Update

The 1989 conference to be held in Lethbridge from November 2 to 4, 1989, is shaping up to be another excellent conference. John Percevault, program chairman, indicated that as of March 12, the following number of speakers and sessions were already confirmed.

Grade	Speakers	Sessions
K to 12	6	8
1 to 6	7	11
K to 3	7	13
4 to 6	6	9
7 to 9	8	12
10 to 12	13	21

To make it a real success, all we need is you and your friends to attend.

Summer Courses

The University of Saskatchewan

Education 403.3 Selected Issues in Education: Instructional Uses of Computational Technology in Secondary School Mathematics

Summer Session Term 1
Lectures: 8:30 a.m. to 9:30 a.m. EDUC 1039, Monday through Thursday
9:30 a.m. to 10:30 a.m. EDUC 1037, Monday through Thursday
1 hour daily additional lab timetabled by students
Instructor: Dr. James Beamer, Curriculum Studies, University of Saskatchewan
Saskatoon, Saskatchewan S7N 0W0

The development of a course about the use of electronic technology in secondary school mathematics has been prompted by several factors, such as computer-equipped classrooms and the continued growth of computer support in microcomputer labs within colleges. These developments have ensured the presence of an adequate delivery system for instruction.

Equally important are the several different types of quality software packages being developed for the mathematics classroom. The most sophisticated types of packages are those which include symbol manipulation. Packages such as Maple and muMath have the capability to simplify algebraic expressions, solve equations and graph functions, as well as the power of at least first year

calculus--including symbolic differentiation and integration. IBM is releasing an Algebra Explorations Tool Kit which will have symbolic manipulation capabilities suitable for many routine tasks in secondary school mathematics.

On the geometry side, a number of packages exist which can perform classical constructions to aid in drawing geometric figures including GeoDraw and the Geometric supposer series. Measures of angles and sides can be determined as well as ratios of indicated line segments. These capabilities could be used to develop an electronic laboratory experience which would enable students to reason inductively and form conjectures. From such an intuitive beginning, the need for proof emerges and the traditional deductive/synthetic approach to geometry could be strengthened. A more exciting development is the Proof Checker program which can decide upon the logical correctness of statements used in traditional geometry proofs. Even logically correct, but unnecessary steps, can be identified and, if desired, removed by the computer.

Another computational tool currently seen in schools is the spreadsheet. Few mathematics classes are making use of this device. The proposed instructor of the course has just completed a book on the use of spreadsheets in the math classroom. This software is available within the college for student use. Finally, a series of graphing programs, equation solvers (Eureka) and graphics calculators are now available.

Calendar Description

This course will focus on identifying, using and evaluating commercially available software packages in secondary school mathematics for Apple and IBM-compatible computers. Primary emphasis will be placed on developing student study guides incorporating these software packages. For those individuals with the skills and interest, some programming in structure BASIC may be included. The use of recently developed calculator technology will also be included.

This course is intended for students in the secondary program who need a senior education or open elective, and secondary school math teachers interested in learning new ways to use technology in their classrooms.

Prerequisite: Edcur 211.3 or 318.3, or valid teaching certificate and teaching experience at the secondary school level and the consent of the instructor.

The University of Calgary

Dr. Richard Skemp will offer the following parallel quarter courses.

Pursuing and Engaging in Intelligent Learning of Mathematics

EDIS 509.21 and EDIS 509.23 for teachers working with Grades K to 3.
Date: July 24 to 28, 1989
Time: 8:00 a.m. to 12:00 noon, Monday through Friday

EDIS 509.22 and EDIS 509.24 for teachers working with Grades 4 to 6.
Date: July 31 to August 4, 1989
Time: 8:00 a.m. to 12:00 noon, Monday through Friday

These courses will explore ways to encourage elementary school children to construct sound mathematical concepts and processes intelligently. Participants will construct and use closely sequenced learning activities from Professor Skemp's newly published Structured Activities for Primary Mathematics. They will also become better acquainted with his practical theory, explained in his book Mathematics in the Primary School, by studying and discussing it.

For registration forms, telephone the Faculty of Education at 220-5623.

EDCI 527 Mathematics in Elementary Education I

This is a half course on mathematics curriculum and instruction for teachers involved with students in Grades K to 2.

Date: July 4 to 25, 1989
Time: 1:30 p.m. to 3:45 p.m., Monday through Friday.

For further information, contact the EDCI department at 220-5639.

The University of Alberta

EDCI 533 Lec 75 Intelligent Learning of Mathematics, Division II

Dr. Richard Skemp will be offering this five-day, two-credit course.

Date: July 17 to 21, 1989
Time: 8:30 a.m. to 12:30 p.m., daily
Room: 451a

For more information about the course, please call Daiyo Sawada at 482-0562. For registration information, contact the Special Sessions office at 492-3752.

EDCI 598 Classroom Language and Discourse

David Pimm, from the Open University in England, will offer this three-week course during spring session.

Date: May 1 to 19, 1989
Time: 1:30 p.m. to 3:50 p.m.
Room: 277

The course will be oriented around the study of classroom language and its impacts on the curriculum. Pimm will be bringing interesting classroom videos to be used and analyzed in the course. Consent of the Department of Secondary Education is required. The course is aimed at graduate students and diploma students. For further information, please contact Tom Kieren at 492-3752.

EDCI 468 Junior High School Mathematics Teaching

Dr. Sol Sigurdson will be offering this two-week, three-credit course. This course will be condensed into a two-week format by extending class times to four hours per day. It may be applied to graduate or diploma programs.

Date: July 4 to 14, 1989

The topics covered in the course are geared to the new junior high school program, and all teachers of mathematics are encouraged to attend. The topics fall under these headings:

1. Contextual learning--manipulatives
2. Applications
3. Problem solving
4. Technology uses
5. General instruction--effective teaching

To enroll, contact Special Sessions at 432-3572. Registration opens February 15 and closes June 30. Students should register by June 1 if possible. For further information, contact Dr. Sol Sigurdson at 432-3673.

Overseas and American Job Opportunities

Teachers or administrators seeking positions overseas now have a new resource to guide them. The International Educator (TIE) is a newspaper that this year featured advertisements for over 75 American and international schools. The ads are placed by the schools themselves, and many list specific vacancies, salaries, benefits and instructions for applying. This is the first and only newspaper of this kind available in North or South America. TIE also provides advice on how to pursue overseas school opportunities and features many articles written by overseas educators. The agency is initiating an International Schools' Internship Program for next year. For more information about TIE, write to TIE, Box 103, West Bridgewater, Massachusetts 02379.

Brain Teaser

Exchange one number in the first column for a number in the second column so that both columns add up to the same number.

0	6
2	1
7	5
9	8

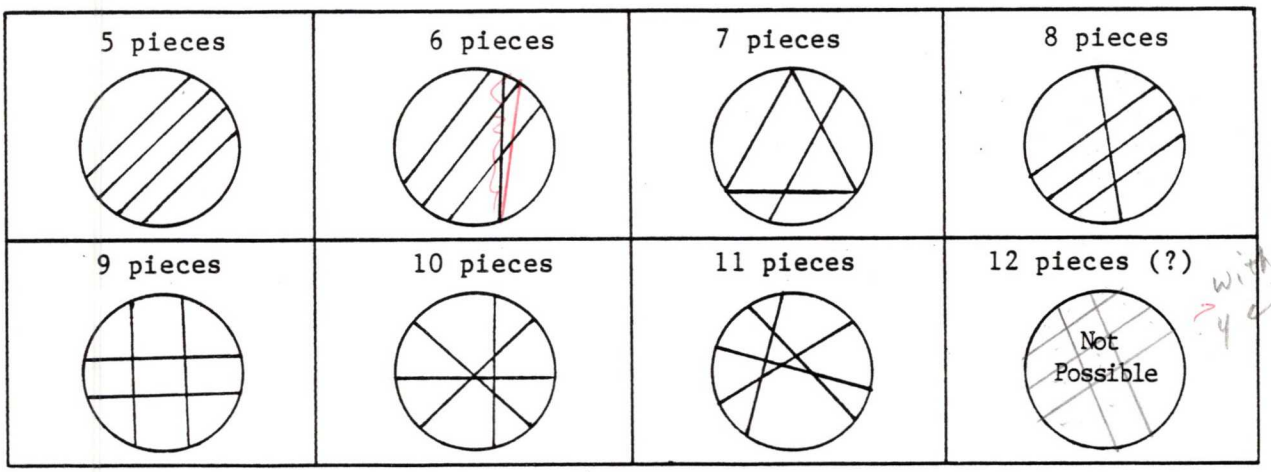
Answer: Switch the 0 and the 1. The sum is 19.

Pizza Puzzles' Solutions

Problem solving skills pupils might use:
* guess and check
* look for patterns
* use of drawings

Comments and suggestions:
* Spaghetti or toothpicks can be used to represent the cuts.
* An extension to the problem might be called "the sloppy pizza problem." In this case, after a cut is made the resulting pieces are stacked on top of one another. Then another cut is made and another stacking takes place and this process is continued.

1. Answers will vary. Here are some possibilities:



2. (a)

Cuts	1	2	3	4	5	6	10	12
Fewest number of pieces	2	3	4	5	6	7	11	13

(b) 101 Note: The number of pieces is equal to one more than the number of cuts (P = C + 1).

3. (a)

Cuts	1	2	3	4	5	6	10	12
Greatest number of pieces	2	4	7	11	16	22	56	79

Note: The "greatest number of pieces" jumps by 2, then by 3, then by 4, etc. Some pupils will also note the following pattern. To find the number of pieces, say for 5 cuts, add 5 to the previous number of pieces (5 + 11 = 16).

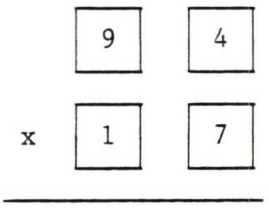
(b) 5,051 Some pupils may be tempted to continue the pattern up to 100 cuts. Instead they should be encouraged to look for a pattern that does not rely on the previous entry. One formula: $p = \frac{c\,(c + 1)}{2} + 1$

Note: This is 1 more than the sum of the first n counting numbers.

Digit Shuffle

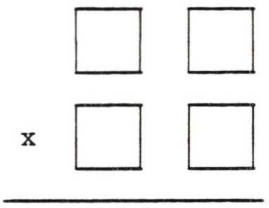
1. This problem uses the digits 1, 4, 7 and 9.

   Complete the problem.

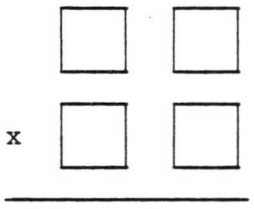


2. Use the same digits. Fill in the blanks.

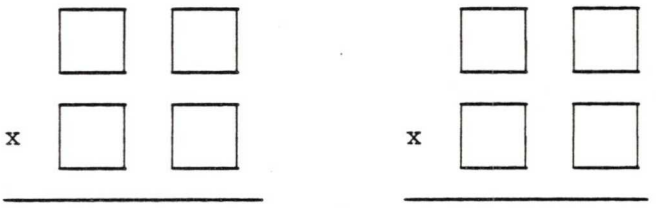
   Try to get an answer larger than 6,000.



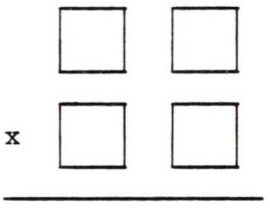
   Find another.



3. Find two problems with answers smaller than 1,000.



4. Find an answer close to 4,000.



5. Each multiplication problem uses the digits 6, 5, 3 and 2. Circle the problem you predict would give the larger answer.

   63 x 52 or 62 x 53

   Check your prediction. Discuss your conclusions. Answer in the next issue.

MCATA Elections

Nominations of candidates for the following offices for the 1989/90 school year are now being accepted:

President	Secretary
Vice-President	Treasurer

If you wish to nominate a candidate, please complete the form below and mail it, by May 9, 1989, to Bob Michie, 149 Wimbledon Crescent SW, Calgary, Alberta T3C 3J2.

If an election is necessary, it will be conducted by mail. Ballots will be sent to all members on or about May 25, 1989.

Ensure an active council by nominating people who will take an active part in making the Mathematics Council a benefit to all mathematics teachers.

Nomination Form

WE, the undersigned members of the MCATA, nominate _____
(name)

of _____
(address)

as a candidate for the office of _____ in the MCATA for the year 1989/90.

Signatures and addresses of two nominators:

Name _____ Address _____

_____

Name _____ Address _____

_____

(Please include a brief resume of the nominee's qualifications for the position on the reverse side of this sheet.)

I accept this nomination _____
(signature of nominee)

Mathematics Educator of the Year

Nomination Form

Nominee's Name _____ Phone _____

Home Address _____

School Address _____

Present Position _____

_____

_____

_____

_____

_____

Nominated by _____ Phone _____

Address _____

Date _____

The award will be presented at the annual MCATA conference held in Lethbridge from November 2 to 4, 1989.

Mail nomination form before **September 11, 1989** to

Bob Michie
Chairperson
Award Selection Committee
149 Wimbledon Crescent SW
Calgary, Alberta
T3C 3J2