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# Mathematics Council NEVSLETTER The Alberta Teachers' Association

Volume 8

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# Mathematics Assessment— A Travesty of Justice

The Curriculum and Evaluation Standards for School Mathematics (NCTM 1989), likely the most comprehensive mathematics document of the past decade, calls for radical "design change" in all mathematics education. But, the area that receives particular notice and calls for the most radical change is student assessment.

Without changing the manner in which student achievement is assessed, the mathematics curriculum will not be implemented in the classroom regardless of how texts or local curricula change. Explicit in this warning is the perceived power that compulsory outside assessments, such as curriculum designers and textbook publishers, wield over teachers. The tested curriculum is what will be taught regardless of the broader goals and objectives of teachers and mathematics programs. By publishing students' provincial examination results, and thereby claiming one school's superiority over another and one teacher's superiority over fellow teachers on the basis of these findings, high stake testing has become omnipresent and debilitating. Since the stakes are so high and the pressure from school boards, administration and parents is so great, teachers feel compelled to teach to the test. Imagine the pressure a teacher is under when the principal phones her home at 10 p.m. and asks, "Why didn't John Smith do better on the test?" To what extent are we as teachers a party to this situation? Do we express feelings of powerlessness as if this testing took over by "right of eminent domain"?

Influencing the powers to change the emphasis placed on provincially-based exams is not easy because people perceive it as politically prudent to do so. However, we must not become complacent and play dead. Armed with the standards, it is time to strike a counter claim on the mathematics curriculum. Our claim should make students, not test scores, the mathematically powerful. It should make teachers, not testers, the determiners of instructional objectives. It should make learning, not licensing, the focal point of schooling. We have indicators of success in mathematics that are more revealing than the results of standardized tests. Standardized tests only consider the answer and do not recognize the students' thought processes.

As seductive as tests scores are, their perceived power must be resisted if teachers are to reclaim their roles as coordinators of curriculum reforms, if teachers are to reclaim their rightful places on curriculum-evaluation teams, and if students are to reclaim their mathematical power and become selfregulating, self-monitoring and self-controlling individuals. To achieve this, assessment must be tied to larger curricular goals and objectives. Evaluation data must come from a variety of sources, namely, observations, interviews, journal writings, portfolios, extended projects, as well as from norm and criterion reference tests. Evaluation should be determined by an evaluation team consisting of teachers, supervisors, administrators, parents, students and test constructors serving as "tenants" in common to determine the test questions and the actions to make mathematics accessible to all. Only by so doing will mathematics be exciting to teach and to learn. It is time to make our voices heard.

#### References

- National Council of Teachers of Mathematics (NCTM), Commission on Standards for School Mathematics. <u>Curriculum and Evaluation Standards for School Mathe-</u> matics. Reston, Va.: NCTM 1989.
- Ellcot, Portia. "Reclaiming School Mathematics." <u>Arithmetic Teacher</u> 37, no. 8 (April 1990): 4 - 5.

# **Evaluation in Mathematics**

An excellent publication entitled <u>Assessment Alternatives in Mathematics</u> has been prepared by the California Mathematics Council and the EQUALS staff at the University of California at Berkeley. Request a copy by writing to EQUALS, Lawrence Hall of Science, University of California, Berkeley, Calif. 94720.

# **Get Smart**

The <u>Operation SMART Research Tool Kit</u> is a new teaching tool designed to strengthen mathematics and science programs. The kit contains intriguing fun and challenging evaluation activities that nine- to fourteen-year-old girls conduct to assess their own and each other's attitudes, plans and aspirations in mathematics and science. Each kit contains 13 "tools" or activities with instructions, a leader's handbook and enough materials for a group of 15. Operation SMART is a Girls' Club of America program to encourage every girl to achieve in science, math and relevant technology. Kits can be purchased for \$35 (prepaid) from the Girls' Clubs of America National Resource Centre, 441 West Michigan Street, Indianapolis, Ind. 46202.

# **NCTM Board Approves Project**

The NCTM board of directors has approved the establishment of a professional standards commission. By 1991 the commission hopes to disseminate a comprehensive document outlining the standards for teaching mathematics, the professional development of teachers and teaching evaluations. The standards will operate as a companion to the Curriculum and Evaluation Standards for School Mathematics.

#### Excellence in Mathematics Teaching

Declining student performance, a shortage of qualified mathematics teachers and the public demand for school accountability have forced the commission to address the gap between ideal professional practice and the reality of mathematics instruction today. The commission will strive to outline a set of principles determining what constitutes excellence in mathematics teaching and how it can be evaluated. The commission has compiled a set of conditions describing the environment necessary for teachers to implement the curriculum standards learning and teaching goals in the context of the three teaching standards sections.

#### Curriculum Standards + Teaching Standards = Professional Standards

Standards for Teaching will focus on how teachers select mathematical content, organize it into instructional units, plan and implement activities that motivate students, monitor and assess students' learning and use classroom data in conjunction with resources to make decisions about instructional alternatives.

Professional Development of Teachers will outline what the Council expects of teachers entering the profession and what it expects of teachers at various stages in their careers. Preservice and inservice professional development will be viewed in terms of mathematical, pedagogical and foundational content, as well as clinical experience.

Standards for the Evaluation of Teaching focuses on evaluating classroom proficiency and continued professional growth. It will delineate the goals, processes and steps of evaluation, and the roles of teachers, peers, students and supervisors. This section will also define the appropriate uses and interpretation of evaluative data.

The commission will consist of a project director and three writers, each of whom will develop one of the new standards components. The commission, along with the NCTM president, president-elect and executive director, will be assisted by a 15-member NCTM advisory group consisting of mathematics teachers, supervisors and evaluators, and teacher educators. This group will outline each component, react to drafts, suggest revisions and conduct hearings on a draft version of the project during 1989-90.

# Some "Almost" Equations

On this page, you will see some "almost" equations. My typewriter broke down and will print only the numbers, not the symbols for the operations. That is, it will not type +, -, x,  $\div$  or = signs. So, if I meant to write 5 x 7 = 28 + 7, I would only get 5 7 28 7.

Your job is to fill in the proper signs between the numbers given below to make each "almost" equation a true and correct equation. The first one is done for you.

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12	3	3	5			6	4	6	4	14					
12	6	12	10			6	6	6	6	6	2				
12	3	40	4			3	4	5	30	40	10				
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This activity is reprinted from the Idaho Council of Teachers of Mathematics Newsletter 15, no. 3 (March 1984).

# Attention Secondary Mathematics Teachers

# WE KNOW YOU ARE USING VARIOUS PROBLEM SOLVING TECHNIQUES IN YOUR MATH CLASSES.

## **PROBLEM:**

Problem solving has become the major emphasis in the new mathematics curriculum as outlined by Alberta Education. Some teachers feel very much at ease with this approach while others are experiencing difficulties incorporating problem solving into their classrooms.

## UNDERSTAND THE PROBLEM:

MCATA is producing a monograph dealing with the various ways that teachers are incorporating problem solving into their mathematics classrooms. We hope to have this document ready early in 1991.

## DEVELOP A PLAN:

To make this document most useful and of significant interest, we would like to include papers from teachers outlining successful ideas that have been used to enhance the use of problem solving throughout their mathematics curriculum.

## CARRY OUT THE PLAN:

MCATA is inviting mathematics teachers to submit papers focusing on problem solving in the new curriculum. We are requesting submissions in the following format -

Teacher	Identification:	Name:	Address:	School / Address:
		Phone Nu	mber:	

Using a problem or situation as the focus:

- 1. State the problem or describe the situation.
- 2. Identify the level(s) and strand(s) addressed by the problem/situation.
- 3. Discuss the specifics of the use of the problem in your classroom including such things as strategies for promoting student understanding, student talk and writing during problem solving, and evaluation of student progress in problem solving.

## LOOKING BACK:

Submissions accepted for publication will contain the author's name, school and address unless otherwise requested.

If you are interested, submit your paper by Nov. 1, 1990 to:

Mr. R. Midyette c/o Ernest Manning High School 3600 - 16th Avenue S.W. OR Calgary, Alberta T3C 1A5 Mr. K. Molyneux c/o J.G. Diefenbaker High School 6620 - 4<sup>th</sup> Street N.W. Calgary, Alberta T2K 1C2

# The Right Angle

## Senior High School Mathematics Update

The Mathematics 20, 23 and 24 courses were field-tested during the first semester of the 1990-91 school year. The Ad-Hoc Curriculum Committee used the comments and suggestions it received to revise the courses.

The following resources were field-tested to support the courses. The authorized resources will be available through the LRDC by the end of June 1990.

- Math 20 Addison-Wesley Publishers, <u>Mathematics 11</u>, Alberta Edition Dale Seymour Publications, <u>Exploring Probability</u> and <u>The Art and Tech-</u> <u>nique of Simulation</u> Holt, Rinehart and Winston of Canada, <u>Holtmath 11</u> Nelson Canada, <u>Mathematics: Principles and Process 11</u>
- Math 23 Dale Seymour Publications, Exploring Probability Gage Educational Publishing Company, <u>Mathematics for a Modern World</u> <u>Book 3</u>, Third Edition <u>McGraw-Hill Ryerson</u>, <u>Allied Mathematics 11</u> Nelson Canada, Math Matters Book 3, Alberta Edition
- Math 24 Houghton Mifflin Canada, <u>Consumer Mathematics</u> Scott, Foresman and Company, <u>Consumer and Career Mathematics</u>, Third Edition Canadian Edition

The following list identifies additional resources for implementing the senior high school mathematics courses:

Title	Course	LRDC Code	Price
Print			
* Activities for Implementing	All Senior High	OMA10034	\$ 16.35
Curricular Themes from the Agenda			
for Action (TR)			
* Curriculum and Evaluation	A11	OMA00001	29.75
Standards for School Mathematics (	(TR)		
* How to Evaluate Progress in Proble	em All	OMA10035	7.15
Solving (TR)			
* Mathematics Dictionary (TR)	All Senior High	OMA10032	55.90
* The Language of Graphs (TR)	10, 13, 14, 20, 23	0MA10037	7.45
Kits			
* Algebra Tiles for the Overhead	10, 13, 14, 20, 23	0MA10036	28.80
Projector (TR)			
* Algebra Tiles, Student Set	10, 13, 14, 20, 23	OMA10038	24.90
(5  sets of  32)	,, _, _, _,		
(3 0000 01 01)			
Software			
* Computer Graphing Experiments 1	10 - 12	OXC10001	101.10
* Computer Graphing Experiments 2	10 - 12	OXC10002	101.10
* Computer Graphing Experiments 3	10 - 12	OXC10003	101.10

*	MasterGrapher and 3D Grapher	A11	Seni	or High				
	Version 1.0 IBM - 3 1/2"				(	OXC10124		32.65
	IBM - 5 1/4"				(	OXC10125		32.65
	APPLE				(	OXC10126		32.65
	MAC				(	OXC10127		32.65
Mo	pnographs							
*	Problem Solving Mathematics: Focus for the Future	10,	11,	12	(	OXS10010		3.10
AL	Idlovisual	• •						
*	Of Dice and MenVideo	20,	23	Regional	Film	Centres	ર્ષ	ACCESS
×	Trigonometric Function I			Regional	Film	Centres	δr	ACCESS
	(English and French)							

These resources are useful for teaching the new programs and are correlated throughout the Teacher Resource Manuals.

# Thought for the Day

We as teachers dare to dream, Hence we transform Obstacles into advantages, Difficulties into achievements, And dreams into realities.

# MCATA Executive 1989/90

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# **ENERGIZING POTENTIAL**



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## **KEYNOTE SPEAKERS**

PRECONFERENCE INSTITUTE: THURSDAY SEPTEMBER 27. STRAND A:

A.M. Administrative Provisions for the Gifted and Talented. Recognizing Connections: ALBERTA EDUCATION Initiatives-Implications for Educating the Gifted and Talented.

P.M. DR. MARGARET LIPP - UNIVERSITY OF REGINA 'The Canadian Perspective'

STRAND B:

DR. JOYCE VAN TASSEL-BASKA - WILLIAM AND MARY COLLEGE 'Appropriate Curriculum for Gifted Students'

THURSDAY EVENING SEPTEMBER 27 FULL CONVENTION BEGINS DR. NORAH MAIER - UNIVERSITY OF TORONTO 'Future Directions for World Wide Connections in Gifted Education'

#### **FRIDAY SEPTEMBER 28**

DR. JULIAN STANLEY-JOHNS HOPKINS UNIVERSITY 'The Mathematically Precocious'

#### SATURDAY SEPTEMBER 29

DRS. SHEILA AND JOSEPH PERINO-NEW YORK 'Parenting the Gifted: Developing the Promise' DR. JAMES R. DELISLE - KENT STATE UNIVERSITY 'Understanding Giftedness From a Child's Perspective'

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# CONFERENCE HIGHLIGHTS



THURSDAY, SEPTEMBER 27, 1990 - PRECONFERENCE INSTITUTES: ADMINISTRATIVE PROVISIONS FOR THE GIFTED AND TALENTED STRAND A: 'ALBERTA EDUCATION: INITIATIVES IN GIFTED EDUCATION AND DR. M. LIPP 'THE CANADIAN PERSPECTIVE'. STRAND B: "ALL DAY WORKSHOP WITH DR. J. VAN TASSEL-BASKA" 8:00-8:45 AM REGISTRATION FOR PRECONFERENCE INSTITUTES 12:30-7:30 PM DISPLAYS OPEN 6:00-7:45 PM SPEAKERS' DINNER **REGULAR CONFERENCE BEGINS** 6:30-7:45 PM REGISTRATION FOR FULL CONFERENCE AND RECEPTION 8:00-9:30 PM KEYNOTE SPEAKER - DR. NORAH MAIER FRIDAY, SEPTEMBER 28,1990 8:00-8:45 AM REGISTRATION 9:00 AM-5:00 PM DISPLAYS OPEN 9:00 AM- KEYNOTE SPEAKER - DR. JULIAN STANLEY 11: 00 AM-4:00 PM OVER 20 CONCURRENT SESSIONS INCLUDING TALKS BY DR. N. MAIER, DR. M. LIPP AND DR. J. STANLEY 4:00 PM ATA GTEC ANNUAL GENERAL MEETING 6:30 PM BANQUET AND ENTERTAINMENT SATURDAY, SEPTEMBER 29, 1990 - LAST DAY OF THE CONFERENCE 8:00-8:45 AM REGISTRATION 9:00 AM - 2:30 PM DISPLAYS OPEN 9:00 AM - KEYNOTE SPEAKERS - DRS. S. AND J. PERINO 11: 00 AM-3:00 PM OVER 20 CONCURRENT SESSIONS INCLUDING TALKS BY DR. S. PERINO, DR. J. PERINO, DR. J. DELISLE, AND DR. J. STANLEY 12:30 PM - 1:15 PM AABC ANNUAL GENERAL MEETING 3:00 PM CLOSING ADDRESS BY DR. J. DELISLE

ENERGIZING POTENTIAL - SEPTEMBER 27-29, 1990 THURSDAY PRECONFERENCE INSTITUTE INCLUDES THURSDAY NIGHT RECEPTION & KEYNOTE ADDRESS & 1 LUNCH. PLEASE INDICATE WHICH STRAND YOU WILL BE ATTENDING STRAND A, OR Β, \$85.00 BEFORE JUNE 1. \$100.00 AFTER JUNE 1. FULL CONFERENCE REGISTRATION- INCLUDES THURSDAY NIGHT RECEPTION & KEYNOTE ADDRESS, & ALL FRIDAY AND SATURDAY SESSIONS, and 2 LUNCHES. \$125.00 BEFORE JUNE 1. \$150.00 AFTER JUNE 1. 1 DAY REGISTRATION-INCLUDES THURSDAY NIGHT RECEPTION & KEYNOTE ADDRESS. FRIDAY OR SATURDAY SESSION, and 1 LUNCH. PLEASE INDICATE FRIDAY OR WHICH DAY YOU WILL BE ATTENDING SATURDAY \$85.00 BEFORE JUNE 1. \$100.00 AFTER JUNE 1. BANQUET TICKET(S) FOR FRIDAY NIGHT @ \$23.00 EACH Total Payable (include registration fee and banquet tickets)

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# Mathematics: Into the Third Millennium

## **Information Sheet**

### Registration

Registration forms will be included in the program booklets that will be sent to all NCTM members in August 1990.

#### Fees

NCTM Member .	•	•	•	•	•	•	•	•	•	٠	Ş28	(U.S.)
Institutional	Me	eml	bei	c	•	•	•	•	•	•	\$28	(U.S.)
Nonmember	•					•		•			\$63	(U.S.)
(One-Day)			•				•				\$38	(U.S.)

## **Special Registration Fees**

Elementary schools with an institutional membership including a subscription to the <u>Arithmetic Teacher</u> can register their teachers at the member registration rate in advance. All other institution members can register one teacher only at the member rate in advance.

#### **Group Discounts**

NCTM offers discounts for group registrations paid by schools or school districts, parent-teacher associations or companies. To qualify as a group, all individual registration forms must be submitted together and paid for at one time. Group registrations must be received no later than the established advance-registration deadline.

Discounts will be based on the appropriate registration fee for each teacher:

2 to 5 teachers . . . . . . . . 10% discount 6 to 10 teachers . . . . . . . . . . 20% discount 10 or more teachers . . . . . . . . . . . . . . 30% discount

Membership fees do not qualify for the discount.

## **Conference Hotels**

Skyline	Palliser
110 9 Avenue SE	133 9 Avenue SW
Calgary, Alberta	Calgary, Alberta
266-7331	262-1234

# WORKSHOPS

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Corral	7. 6-9 Gene Dolson Negative Attindes? Postive Activities! R. Lee	28. 4-6 George H. Willson A Mudley of Guoniging Activitus Mendes	45. 7.9 Barry & Jan Scully Cmp Tue Fold Gul Paste Simon Concrete to Abstract	66. K-3 66. K-3 Clare Herdema Pronum anyough & Concrete Tools for Protein Source O'Grady
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Stephen	4. K-3 Mary Lou Nevin Develop Lopus Threang with Your Own Antribule Models	31. 6-9 Barbara Morrison Stephen Jeans Decovering Mathematics Blecovering Mathematics Skrypnek	44. 6-9 Thor Fridriksson Main A Way at Threing Date Analyses Unit Crawford	71. 9-11 David Parkinson Umo Agenta Taus Umo Agenta Taus To Factor Troomata with Leading Coefficients A to 1 Nicholas
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# The MCATA Award for Excellence in Mathematics Teaching

## Guidelines for Candidate Selection

MCATA wishes to acknowledge the excellence in teaching mathematics within Alberta. As part of this acknowledgment, MCATA is providing an opportunity for colleagues to nominate individuals who

- \* are actively teaching or are otherwise involved in the field of mathematics in the Alberta educational system (e.g., classroom teachers, postsecondary institution teachers, teachers with Alberta Education, administrators or other people involved in the field of mathematics);
- \* represent the profession positively and with enthusiasm to students, colleagues and the public;
- \* are identified as effective teachers by students, colleagues and/or parents;
- \* motivates students to pursue mathematics;
- \* stimulates students to see mathematics as a major force in society;
- \* participates in professional activities; and
- \* demonstrates a knowledge of current issues and developments in mathematics education.

MCATA Award for Excellence in Mathematics Teaching

#### Nomination Form

Nomination Deadline: September 5, 1990

Mail to Louise Frame Past President, MCATA 32, 1012 Ranchlands Blvd. NW Calgary, Alberta T3G 1Y1

I would like to nominate \_\_\_\_\_\_\_as a candidate to receive the MCATA Award for Excellence in Mathematics Teaching. Please find attached a letter supporting my nomination outlining the qualifications of the nominee.

Nominator	Nominee
Name	Name
Address	Address
City/Town	City/Town
Postal Code	Postal Code
School	School
Phone	Phone



**Membership Application** 

#### MEMBERSHIP APPLICATION\* (Full-time student dues are one-half regular dues.)

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