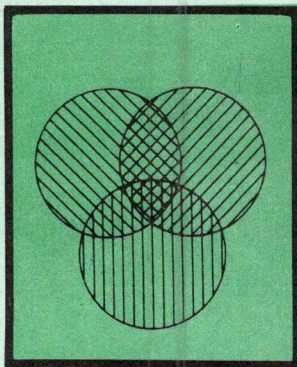


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Mathematics Council NEWSLETTER

The Alberta Teachers' Association

Volume 12

Number 5

June 1994

From the Editor

This is the last issue of the *Mathematics Council Newsletter* as we know it. We are looking forward to some interesting changes in September—many diligent souls are already collecting information for the first issue's focus "Effective Communication in Mathematics."

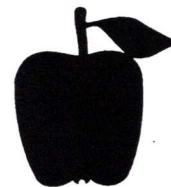
As always, the success of any council's publication depends on the contribution of the council membership. We hope that you and your colleagues will be prepared to contribute articles, successful classroom ideas, interesting thoughts for the day or anything else that could interest our readers. I know you have many worthwhile contributions. Do give it some thought over the summer.

My last editorial stressed the need for continued professional development for each and every one of us. With that in mind, I encourage you to organize a miniconference in your area, attend the NCTM Regional Conference and the Mathematics Council's annual conference in October and renew your MCATA membership. Also, an NCTM membership provides access to many excellent materials which will make teaching your students mathematics more interesting and enjoyable.

Have a great holiday and a well-deserved rest.

—Art Jorgensen

Have Some Fun



Conduct an apple taste contest.

Gather four types of apples.

Conduct a survey to see which type of apple your classmates prefer. How will you record the data? Is that the only way to record the data? If you were selling apples, how much bin space would you devote to each type of apple?

This exercise is patterned after an exercise on page 475 of the *Arithmetic Teacher*, April 1994. It should promote a great deal of discussion.

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The Right Angle

News from Curriculum

Elementary

The implementation date for the elementary mathematics program has been revised to September 1995. It is scheduled for optional implementation in September 1994. The revised program of studies for elementary mathematics will be distributed to elementary schools in June 1994, and new learning resources for the program will be available.

Senior High

As many of you know, the Blue Ribbon Panel recommended decreasing the content of Mathematics 30 by removing a unit of study. After many discussions with teachers province-wide, and, after many hours of deliberation, the following decision has been made:

- **Delete** effective September 1, 1994, Statistics Overview: Statistics forms an essential part of the modern mathematics curriculum. Knowledge of this type of statistics is necessary for students to become intelligent consumers who can make critical and informed decisions.
- **Insert** effective September 1, 1994, Statistics Overview: One form of data that is often encountered have a normal distribution. Statisticians who make predictions about a population based on known data are particularly interested in normally distributed data.
- **Delete** effective September 1, 1994 (moved to Mathematics 10 effective September 1, 1996), Statistics: Learner Expectation 1.
- **Delete** effective September 1, 1994 (no replacement), Statistics: Learner Expectation 3.
- **Delete** effective September 1, 1994, Quadratic Relations: Learner Expectation 2: Students will be expected to demonstrate an understanding of the general quadratic relation $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$ as the algebraic representation of any conic.
- **Insert** effective September 1, 1994, Quadratic Relations: Learner Expectation 2: Students will be expected to demonstrate an understanding of the general quadratic relation $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0, B = 0$ as the algebraic representation of any conic with an axis of symmetry parallel to one

of the coordinate axes. The Learner Expectation will continue to include sections 2.1 and 2.1.1 as in the 1991 Course of Studies.

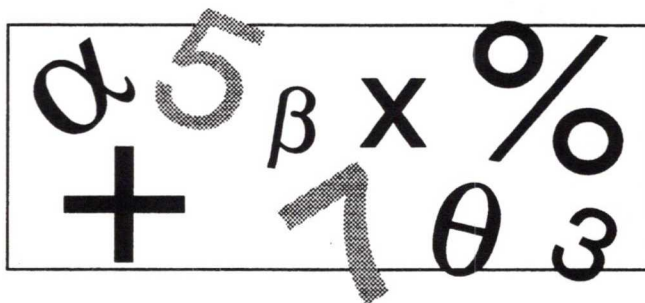
These changes will be mailed to all schools, so look for them. For further information, phone Hugh Sanders at 427-2984.

News from Student Evaluation

Diploma Examinations Program

One initiative arising out of Alberta Education's Three-Year Business Plan is a Mathematics 33 diploma examination. The first one will be administered in January 1996. We are in the process of hiring an examination manager for the Mathematics 33 Diploma Examination Program. For further information, phone Florence Glanfield or Phill Campbell at 427-0010.

—*Florence Glanfield*
Alberta Education Representative



Affiliated-Group Projects

In April 1993, the Mathematics Council of Newfoundland received a special grant from NCTM to support its initiatives in a project on alternative assessment. The Newfoundland Teachers' Association and the Department of Education also provided some funding.

Four teachers from each of seven school boards are participating in the project of testing different assessment techniques in Grades 4 to 7 mathematics. In October 1993, 24 teachers along with mathematics coordinators met in Gander with two resource people from Durham Board. The development team is using the NCTM video on assessment and the book *Mathematics Assessment: Myths, Models, Good Questions and Practical Suggestions*. They will share their experiences with other teachers in Newfoundland via the computer network STEMNET. The project will continue under the leadership of Graham Wood, past president of the Council, and an evaluation will be done this year.

CHANGING DIRECTIONS

Canadian Regional Conference

Edmonton, Alberta

October 20–22, 1994

The NCTM Canadian Regional Conference and MCATA's next annual conference is only five months away! The conference will begin with MCATA's Annual General Meeting on Thursday evening, October 20.

Registration Fees

\$45.00 (U.S.) NCTM Individual Member (membership number required)

\$45.00 (U.S.) Elementary school institutional member

\$45.00 (U.S.) Institutional member—other institutions

\$22.50 (U.S.) Full-time college student (ID required)

\$85.00 (U.S.) Nonmember (full conference)

\$51.00 (U.S.) Nonmember (one day)

Group Registration Policy

To qualify as a group, individual registration forms must be submitted together and paid for at one time via school/school district purchase order form accompanied by a cheque from the school/school district. Group registrations must be received no later than September 30, 1994.

Discounts will be based on appropriate registration category for each teacher. For example, if a district registers two teachers together and one is an NCTM member, the fee is 10 percent off the member rate for that person and 10 percent off the nonmember rate for the nonmember. **No discounts are available on NCTM memberships.** Discounts for group registration are as follows:

10 percent 2 to 5 registrants

20 percent 6 to 10 registrants

30 percent 11 or more registrants

Registration forms and program booklets will be sent to schools province-wide at the end of June. Phone Florence Glanfield at 427-0010, ext. 410, or Marge Marika at 433-0692 for more information.

Editor's note: The Program Committee is looking for volunteers to preside at the sessions. We need one presider per session. If you would like to participate, contact Yvette d'Entremont, program chair, at 457-1523 as soon as possible.

Plan on attending!

Miniconferences and Resource Fairs

The MCATA executive is eager to help promote miniconferences and resource fairs. If you are interested, contact Myra Hood (see executive list). A summary of the 1993–94 miniconferences and resource fairs follows:

Edmonton

- A successful miniconference was held on November 8.
- Fifty teachers and administrators attended the second annual resource fair on January 27. Attendees were delighted with the extensive display of resources. We are optimistic that the number of attendees will increase next year. The exhibitors included Addison-Wesley Publishers, Exclusive Educational Products, Gage Educational Publishing, McGraw-Hill Ryerson, Microtren Electronic, Nelson Canada, Pippin Publishing and Reidmore Books. Hats off to Florence Glanfield for her hard work in organizing these events.

Fort McMurray

- On January 31, the Math Council sent Sandra Unrau to Fort McMurray to facilitate their PD Day, focusing on the "New Elementary Mathematics Curriculum." The day was highly successful. Thanks to Sandra for her hard work.

Calgary

- On February 2, 260 teachers and administrators made the third annual resource fair an outstanding success. Attendees were delighted with the displays and the opportunity to talk directly with the publishers. The exhibitors included Addison-Wesley Publishers, Child's Play, Educational Distributors, E.E.C., Exclusive Educational Products, Gage Educational Publishing, Ginn Press, Harcourt Brace Jovanovich, Learning Tree, McGraw-Hill Ryerson, Nelson Canada, Pippin Publishing and Reidmore Books.
- Two hundred and forty-one teachers and administrators attended this year's elementary miniconference. Attendees enjoyed the problem-solving theme, selecting two sessions of their choice from six. These sessions were preceded by a wonderful dinner with colleagues. Thanks to Richard Kopan for his support.

Professional Development

Halifax Leadership Conference

The 1994 Canadian Leadership Conference will be held July 13 to 16, 1994, at the Prince George Hotel in Halifax, Nova Scotia. The conference has been extended an extra day to allow more time to address Canadian educational issues. Previous conference evaluations indicated that more time was need for sharing sessions.

The theme "Developing Leadership Skills for an Effective Organization" was motivated by the interest of affiliated groups to have strong mathematics associations in these times of mathematics reform and by the need to evaluate our role in our members' professional development. The conference will also allow participants to share experiences and to become better informed about services NCTM can provide to an association and its members. We look forward to seeing as many of you as we can!

C²PC

Graphing Calculator Institute

This is a reminder of the Graphing Calculator Institute to be held August 8 to 12, 1994, at the University of Calgary. Presenter Bob Hart, Crescent Heights High School, Calgary, will provide participants with training in the use of graphing calculator-based visualization and numerical methods designed to enhance the teaching and learning of mathematics. Contact Margaret-Anne Stroh, Conference, Catering and Special Events, University of Calgary, 1833 Crowchild Trail NW, Calgary T2M 4S7; phone 220-3360, fax 284-4184. See Volume 12, Number 4, April 1994 of the *Mathematics Council Newsletter* for more details.

Free Workshops for Elementary Mathematics

Reidmore is offering free workshops for people implementing the new elementary mathematics curriculum this fall. The workshops will take place in Calgary (August 17) and Edmonton (August 19), from 9:30 a.m. to 4:00 p.m. They are open to consultants, teachers and math specialists; enrollment is limited to 40 participants in each location. The focus of the day-long session will be hands-on planning for the new curriculum, using *MathWorlds* as the sample resource. Workshop leader will be Pat Redhead, consultant with the Edmonton Public School Board.

She will be supported by one other teacher and Reidmore staff. Participants will be responsible for travel costs and lunch. For more information, call Cathie Crooks at 424-4420.

1994 CMASTE Mathematics Teacher Workshops

The Centre for Mathematics, Science and Technology Education (CMASTE), in conjunction with Faculty of Education Continuing Professional Education, is offering three high school mathematics teacher workshops. These workshops will allow participants to hear practical suggestions and exchange ideas. Registration deadline is June 15, 1994. For more information, contact workshop coordinator Sol E. Sigurdson, Department of Secondary Education, University of Alberta at 492-0753.

- Teaching Junior High School Mathematics
August 15 to 18, 1994, 8:30 a.m. to 4:00 p.m.
Fee: \$214 (includes GST)

This workshop will focus on recent developments in junior high school mathematics with special attention to the directions Alberta Education is considering.

- Teaching Senior High School Mathematics—
Grades 10 and 11
August 15 to 18, 1994, 8:30 a.m. to 4:00 p.m.
Fee: \$214 (includes GST)

This workshop will focus on the senior high school mathematics program with special attention to developments in student assessment.

- Teaching the New Math 31—Calculus
August 17 to 18, 1994, 8:30 a.m. to 4:00 p.m.
Fee: \$107 (includes GST)

Topics will include precalculus mathematics, numerical methods, applications of calculus, teaching calculus and technology.

Modern Language Council Conference 1994

"Languages Unlimited: Our Hope for the Future" is the Modern Language Council's 1994 conference theme. To be held at the Westin Hotel in Calgary on October 14 to 16, 1994, this year's keynote speaker will be Pat Boyle, writer, editor, speaker and teacher. For more information, contact Diane Randall, 40 Edgemont Court NW, Calgary T3A 2N3; phone 281-4040 (bus.), 239-3780 (res.), fax 281-4042.

What's New

Dive In To Math

This innovative educational video from CTV brings the excitement of Olympic diving to the classroom. *Dive In To Math*, hosted by CTV sports broadcaster Rod Black, uses CTV footage of the men's 10-metre platform diving competition at the 1992 Barcelona Olympic Games to teach data management, statistics and probability. A coeffort of CTV Program Sales and Ontario's Huron County Board of Education, the video can be used in Grades 9 and up. CTV Program Sales is interested in working with the educational market on more joint ventures. CTV will channel profits from the sale of *Dive In To Math* into producing future educational videos. For further information, contact Jennifer Baird at (416) 928-6096 or Mike Marshall at (416) 928-6067.

Exploration in Science Culture 1993

Anyone interested in children, education or science and technology will enjoy this resource. Published by Industry Canada, *Exploration* provides information about, and contacts for, federally funded projects that bring the excitement and potential of science and technology to young people. *Exploration* can be used to explore the availability of programs and services as a source of inspiration for your own projects or as a directory of organizations with whom you might collaborate. Order copies from Science Promotion and Academic Affairs Branch, Industry and Science Policy Sector, Industry Canada, 235 Queen Street, Ottawa, ON K1A 0H5; phone (613) 993-5249, fax (613) 998-0943.

Mathematics Teaching in the Middle School

The first issue of this professional journal for mathematics educators concerned with Grades 5 to 9 is now available. It features a potpourri of practical ideas in 100 color-filled pages of articles, editorials, activities, illustrations and advertisements. Every issue of *Mathematics Teaching in the Middle School* will include ideas for exploring assessment as an integral part of teaching and learning, new ways of using today's technology, the uses of mathematics in the world around us and profiles of people who use

mathematics. A monthly "menu of problems," readers' letters and reviews of resources for teachers will also be included. *Mathematics Teaching in the Middle School* will be published September, November, February and April. NCTM individual members may designate it as an add-on subscription to their current membership for just \$15. Institutional memberships are \$50. For a free copy of the first issue, phone 1-800-235-7566 or (703) 620-9840, ext. 135, fax (703) 476-2970.

Women Inventors' Project

This nonprofit organization works to increase the number of successful women inventors and entrepreneurs in Canada. Founded in 1986 by two Canadian women, the Women Inventors' Project provides education, advice and encouragement to innovative women of all ages. Through its activities, the project also encourages girls and women to pursue careers in science and technology, and celebrates their achievements. The project has many different resources, such as books and videos, and cosponsors and conducts workshops across Canada. Resources that can be obtained through the Women Inventors' Project include the following:

- *From Idea to Invention* (course materials for teaching invention and innovation)
- *Women Inventors and Inventing Women* (two videos)
- *Inventing Women: Profiles of Women Inventors*
- *What If: Women Inventors and Entrepreneurs* (video featuring successful inventors and entrepreneurs)
- *Daughters of Invention: An Invention Workshop for Girls*
- *Inventors Want to Know: A Reference Guide on Entrepreneurship and Innovation for Information Providers*

For more information, write to Women Inventors' Project, 1 Greenboro Drive Suite 302, Etobicoke, ON M9W 1C8; phone (416) 243-0668, fax (416) 243-0688.

SchoolNet

During spring 1993, various provincial and federal ministries, educational organizations and corporations met to foster school networking across Canada. From this meeting emerged a cooperative federal/provincial/territorial and industry initiative called Canada's SchoolNet, which was officially launched in October

1993. SchoolNet's objective is to enhance learning opportunities and achievements in elementary and secondary schools across Canada by electronically linking them and by making national and international education resources available to Canadian teachers and students.

NCTE Position Statement

"Learning Through Language," a position statement of the National Council of Teachers of English (NCTE), has been endorsed by NCTM's Board of Directors. The position statement elaborates on the theme "No matter what the subject, the people who read it, write it, and talk it are the ones who learn it best." Single copies of the position statement are available free and may be copied without permission from NCTE. Multiple copies are available at a bulk rate of \$7 (U.S.) per 100, prepaid only. Stock #04061. Send request to NCTE Order Department, 1111 W Kenyon Road, Urbana, IL 61801-1096.

Become a Referee

The vitality of NCTM's journals depends on the thoughtful comments of referees who consider each manuscript for the *Arithmetic Teacher*, *Mathematics Teaching in the Middle School* and *Mathematics Teacher*. Referees might expect to evaluate two or three manuscripts each year on topics of their expertise. To volunteer or for more information, write to the journal of choice at 1906 Association Drive, Reston, VA 22091-1593.

NCTM Mailing List

The following statement about NCTM's mailing list is from the Council's "Service Brochure" sent to all new NCTM members. "The NCTM membership list is rented to suppliers, exhibitors, and other organizations that provide product announcement and educational offerings. This keeps members up-to-date on current technology and products. Members may write to the NCTM office to request that their name be omitted if they desire not to receive information of this kind." Such a request will also result in excluding that member's address information for the NCTM *Directory of Individual Members*, and that person will not receive insurance mailings, credit-card mailings or other third-party mailings.

New Communications Handbook

NCTM Communications Handbook provides valuable information on enhancing communications skills and perfecting mathematics and education-related presentations. Included in the handbook is information on shaping your message, giving an effective speech or presentation, responding to questions by members of the media, writing letters to the editor and op-ed pieces and nurturing a relationship with local reporters. Sample press releases and responses are provided. Each affiliated group was sent a complimentary copy of the handbook. Additional copies are available from NCTM for \$7.50 by calling 1-800-235-7566 (orders only). Specify stock #6505.

Windows of Opportunity: Mathematics for Students with Special Needs

Edited by Carol A. Thornton and Nancy S. Bley, this is a professional resource for regular classroom and special education teachers in K-12 who work with students with disabilities in mathematics or with students who are gifted or talented in mathematics. Focusing on nurturing the abilities of these students to think mathematically through appropriate, problem-centred instruction, it includes classroom episodes and programs for or including students with special needs. 1994, 528 pp., ISBN 0-87353-374-7, #550, \$42.50 (U.S.). Write to NCTM, 1906 Association Drive, Reston, VA 22091-1593; phone (703) 620-9840, fax (703) 476-2970. For orders only, 1-800-235-7566. NCTM individual members receive a 20 percent discount.

Oops!

In the Volume 12, Number 4, April 1994 issue of the *Newsletter*, the photo on page 3 was not of the MCATA executive members at the Thinkers' Conference. It was of delegates and presenters attending the Edmonton miniconference on November 8, 1993, at M.E. Lazerte School.

Problems from the 1992–93 AHSMC, Part II

Have your students try the following problems when they want a challenge.

For information regarding AHSMC, contact Alvin Baragar, chair, AHSMC Board, Department of Mathematics, 632 Academic Building, U of A, Edmonton T6G 2G1.

Problem 1

Find all polynomials $P(x)$ that satisfy the equation $P(x^2) + 2x^2 + 10x = 2xP(x + 1) + 3$.

Problem 2

An isosceles triangle is called an amoeba if it can be divided into two isosceles triangles by a straight cut. How many *different* (not similar) amoebas are there?

Solution 1

$P(x)$ cannot be a constant polynomial. Otherwise, the left side of the equation is a quadratic polynomial and the right side linear. Let it be of degree $n \geq 1$. Then the left side is of degree $2n$ and the right side degree $n + 1$. We must have $2n = n + 1$, or $n = 1$. Hence, $P(x)$ is of the form $ax + b$. Now

$$ax^2 + b + 2x^2 + 10x = 2x(a(x + 1) + b) + 3.$$

Comparing the constant terms, we have $b = 3$. Comparing the linear terms, we have $10 = 2a + 2b$ or $a = 2$. Finally, we check that $a + 2 = 2a$ holds, so that the quadratic terms also agree. Hence, the only polynomial that satisfies the functional equation is $P(x) = 2x + 3$.

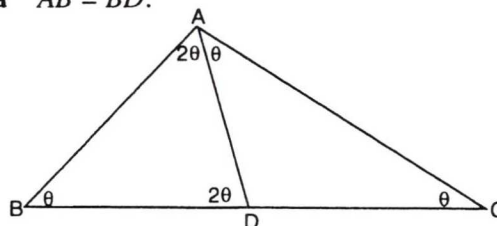
Solution 2

First, observe that to get two triangles, the cut must pass through one of the vertices of the original triangle. When the cut reaches the opposite side, two angles will be formed, at least one of which will not be acute. It follows that the cut cannot be through the vertex of the original triangle with smallest measure. In particular, the equilateral triangle is not an amoeba. In triangle ABC , let $AB = AC \neq BC$.

Case 1 $AB = AC < BC$.

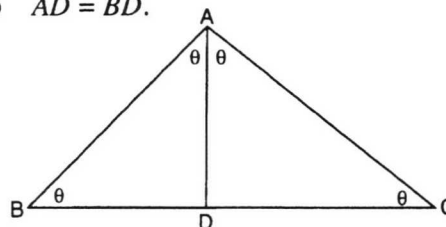
The cut is along AD for some point D on BC . Note that $AB = AC > AD$, so that there are only two ways for BAD to be isosceles.

Case 1a $AB = BD$.



Since $AB + AC > BC$, $AC > CD$. We must have $AD = CD$. Let $\angle ACD = \theta$. Then $\angle ABD = \angle CAD = \theta$, and $\angle ADB = \angle BAD = 2\theta$. From $5\theta = 180^\circ$, we have $\theta = 36^\circ$. Thus our first amoeba is the $(108^\circ, 36^\circ, 36^\circ)$ triangle.

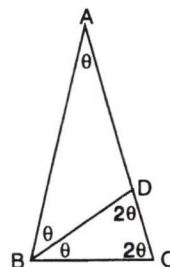
Case 1b $AD = BD$.



We may assume that $AC = CD$ does not hold. Otherwise we have the first amoeba again by symmetry. Hence $AD = CD$. Let $\angle ACD = \theta$. Then $\angle ABD = \angle CAD = \angle BAD = \theta$. From $4\theta = 180^\circ$, we have $\theta = 45^\circ$. Thus our second amoeba is the $(90^\circ, 45^\circ, 45^\circ)$ triangle.

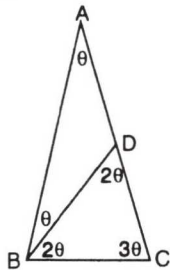
Case 2 $AB = AC > BC$. By symmetry, we may assume that the cut is along BD for some point D on AC . Note that $AB > AD$. If $AB = BD$, they must be shorter than BC , which is not the case. Hence $AD = BD$. Since $\angle BCD = \angle CBD = \angle CBD$, $BD > CD$, so that there are only two ways for BCD to be isosceles.

Case 2a $BC = BD$.



Let $\angle BAD = \theta$. Then $\angle ABD = \theta$, $\angle BDC = \angle BCD = 2\theta$ and $\angle CBD = \theta$. From $5\theta = 180^\circ$ we have $\theta = 36^\circ$. Thus our third amoeba is the $(36^\circ, 72^\circ, 72^\circ)$ triangle.

Case 2b $BC = CD$.



Let $\angle BAD = \theta$. Then $\angle ABD = \theta$, $\angle BDC = \angle CBD = 2\theta$ and $\angle BCD = 3\theta$. From $7\theta = 180^\circ$, we have $\theta = \frac{180^\circ}{7}$. Thus our fourth and last amoeba is the $(\frac{180^\circ}{7}, \frac{540^\circ}{7}, \frac{540^\circ}{7})$ triangle.

Thought for the Day

The best inheritance teachers can give their students is a few precious minutes of their time each day.

Blessed is the person who is too busy to worry in the daytime and too tired to worry at night.

—Leo Aikman

A Sure-Fire Method for Proving Addition, Subtraction, Multiplication and Division

The following article was submitted by Irving Bateman, a retired teacher from Manitoba. How about giving his approaches to the basic operations a try?

Survey results have shown that the major concern of parents of elementary school children is the thorough teaching of the basic concepts—the bricks that will assure success in later educational endeavors. All children must know their times tables and addition and subtraction couplets. Also, they must have a functioning level of understanding of spoken and written communication, established attendance and work habits and a knowledge of acceptable interpersonal relationships. Music, art, drama and physical education should be seen as adjuncts to a well-rounded learning experience but not at the expense of the earlier-mentioned basics.

Arithmetic is an accuracy subject that has basic rules to be memorized and adhered to at all times. Students should have a set of checks to use before submitting their answers for marking. Many students have been taught to redo their work before submission, but this can be tedious and time-consuming. A simple way to quickly verify answers was shown to me by a young student, who, for a brief moment, became the teacher while his principal became the student. In the four basic arithmetical processes, the guiding feature is adding numbers toward the right until only one digit remains. With the number 27, we add $2 + 7 = 9$, which is a single digit. Try a larger number like 349. $3 + 4 + 9 = 16$ and $1 + 6 = 7$. Now study the way to prove each of the four processes

below. Keep your questions simple until you understand the plan. Then make up your own questions and always prove them. At the end of the multiplication section is a large example. Can you prove it in less than one minute? I think you can! Good luck! Watch your examination marks grow!

Addition

56 (augend)
 $\underline{29}$ (addend)
 85 (sum)

Step 1: Add to the right as follows:

$5 + 6 = 11$, then $1 + 1 = 2$ (Circle the ②)

Step 2: $2 + 9 = 11$, then $1 + 1 = 2$ (Circle the ②)

Step 3: Add the two circled numbers $2 + 2 = \boxed{4}$
 (Square box the $\boxed{4}$).

Step 4: Add the sum to the right: $8 + 5 = 13$, $1 + 3 = \boxed{4}$
 (Square box the $\boxed{4}$. If the two squared boxes are the same, the addition is correct.)

You have now learned the simple process. Regardless of the number of addends, the same procedures will be followed. Do not move too quickly into larger additions until the process is firmly established in all minds! Make a game of this process. Encourage children to pass it along to older students and adults.

The children will be proud of being teachers! Not only will you enjoy giving your students better marks but also the students will feel better about themselves!

Subtraction

Simply adding back up is the easiest way to prove subtractions.

Division

The antiquated method for checking divisions by multiplying the divisor by the quotient to get the dividend is time-consuming and is certain to destroy interest in mathematics.

To establish this method of proving divisions, graph paper might be initially used to keep digits one under another.

Quotient	2 4 3 1	
	✓✓✓✓	
Divisor	36) 8 7 5 4 3	Dividend
	(7 2) X X X	
	1 5 5	
	(1 4 4)	
	1 1 4	
	(1 0 8)	
	6 3	
	(3 6)	
	(2 7)	

The proof of this lies in circling the remainder and each of the numbers sitting on a line and then adding them upward and checking them off against the digits in the dividend. Any carryover is added to the column to the left.

Multiplication

We prefer to call this proving process "The Big X" method. For ease in following the instructions, call the opening at the top of the "X" "number one position," at the bottom of the "X" "number two position," on the left side "number three position" and on the right side "number four position."

329	multiplicand	Position 1
26	multiplier	5
1974	subproduct	4 X 4
658	subproduct	8
8554	product	Position 2

Step 1: Add $3 + 2 + 9 = 14$, $1 + 4 = 5$. Place the 5 in the number 1 position on the "X."

Step 2: Add $2 + 6 = 8$. Place 8 in the number 2 position on the "X."

Step 3: (Product) Add $8 + 5 + 5 + 4 = 22$, then $2 + 2 = 4$. Place 4 in the number 3 position on the "X."

Step 4: Multiply the 5 in position one by the 8 in position two and your answer is 40 (two digits). Add $4 + 0$ which is 4. Now place the 4 in position four. The digit on each side of the "X" is 4, and, whenever the same digit fills the two side spaces for the answer of a multiplication, the answer is correct.

Now, see how quickly you can prove this one!

$$\begin{array}{r}
 3596 \\
 \times 274 \\
 \hline
 14384 \\
 25172 \\
 7192 \\
 \hline
 985304
 \end{array}$$

How would you like to check an exam question this quickly?

A Rapid Proof for this Multiplication

Proof	
6	5 6 7 9 4 3 8
X	2 7 6 9 3
9	1 7 0 3 8 3 1 4
9	5 1 2 1 4 9 4 2
	3 4 0 7 6 6 2 8
	3 9 7 5 6 0 6 6
	1 1 3 5 8 8 6 6
	1 5 7 2 8 1 5 7 6 5 3 4

To Prove

Step 1: Add the digits in the multiplicand from left to right to get 42. Now add to the right again to get 6. Place the 6 in the top opening of the "The Big X."

Step 2: Add the digits in the multiplier from left to right to get 27. Then add the $2 + 7$ to get 9 and place the 9 in the bottom opening of the "X."

Step 3: Add the digits in the product from left to right to get 54. Now add the $5 + 4$ to get 9 and place the 9 in the left opening of the "X."

Step 4: Multiply the 6 in the upper opening by the 9 in the lower opening and get 54. Now add the 5 and the 4 to get 9 and place the 9 in the right opening of the "X."

Step 5: If the single digits in the left and right openings of the "X" are the same, the product is correct.

You should be able to verify the answer in no more than 15 seconds!

MCATA Executive 1993-94

President

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Mathematics Council of The Alberta Teachers' Association

Outstanding Mathematics Educator Award

This award is conferred in recognition of outstanding contributions in the field of mathematics education and is presented to the recipient at the MCATA Annual Conference.

Selection Criteria

The nominee should

- have demonstrated commitment to improving student learning,
- have contributed to the professional development of teachers of mathematics,
- be creative and innovative, and
- have credibility within the mathematics education community.

Other areas that demonstrate excellence in mathematics education may be considered.

Eligibility

The nominee must be a member of MCATA.

Nomination Procedure

Nominations for the award may be forwarded to the selection committee. A complete nomination application includes

- information about nominee (see Part 1 on the reverse side),
- information about nominator (see Part 2 on the reverse side),
- two letters of support that reflect the above criteria.

For more information, contact Bob Hart, Chair
Outstanding Mathematics Educator Selection Committee
1503 Cavanaugh Place NW
Calgary, AB T2L 0M8
Phone 284-3729

Deadline for application: **June 30, 1994.**

Mathematics Council of The Alberta Teachers' Association

Outstanding Mathematics Educator Award

Nomination Form

Part 1

Nominee _____
Name _____
Home Address _____
City/Town _____ Postal Code _____
Phone Home _____ Business _____
Business address _____
City/Town _____ Postal Code _____
Signature of nominee _____ Date _____
MCATA membership number _____ Member since _____

Part 2

Nominator _____
Home address _____
City/Town _____ Postal Code _____
Phone Home _____ Business _____
Business address _____
City/Town _____ Postal Code _____
Signature of nominator _____ Date _____

Part 3

A minimum of two letters of support. (Please see reverse side for criteria, eligibility and nomination procedure.)

Please forward to Bob Hart, Chair
 Outstanding Mathematics Educator Selection Committee
 1503 Cavanaugh Place NW
 Calgary, AB T2L 0M8
 Phone 284-3729

Deadline for application: **June 30, 1994**