Mathematics Council
NEWSLETTER
The Alberta Teachers' Association

Volume 12 Number 3 February 1994

From the Editor

I have always contended that children's early experiences with mathematics will profoundly affect their success with mathematics in later years. The following NCTM position paper speaks eloquently to this topic.

Early Childhood Mathematics Education

The National Council of Teachers of Mathematics believes that early childhood mathematics education, for young children aged 3 to 8, should be developmentally appropriate. Developmentally appropriate instructional practices are those in which the mathematics learning environment takes into account the social, emotional, physical and intellectual needs of young children. Because young children actively construct knowledge, instruction should concentrate on facilitating learning through exploration and interaction with materials and people. In early childhood mathematics, how and when the curriculum is taught is as important as what is taught. Thus, endorsing a developmental philosophy for early childhood mathematics education suggests reorganizing classroom practices around the total child rather than allowing materials and rigid time lines to dictate instruction. Furthermore, early childhood mathematics instruction should foster a positive environment, provide equal access for all children and account for cultural and ethnic diversity.

Therefore, the National Council of Teachers of Mathematics recommends developmentally appropriate curriculum and evaluation guidelines for early childhood mathematics instruction that have the following aims:

- Acknowledge and build on children's accumulated knowledge by including children's experiences, language and relevant real-world contexts.
- Incorporate active and interactive learning. Children's understandings develop as they explore, investigate and discuss mathematical concepts. Physical and mental interactions with the environment, materials and

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other individuals give children opportunities to construct, modify and integrate their ideas.

- Offer opportunities for children to develop and expand language acquisition while structuring, restructuring and connecting mathematical understandings. Concepts should be repeatedly experienced through concrete, visual, verbal and pictorial formats. Gradually, children should be encouraged to translate and record their experiences in more abstract representations.
- Be concept and problem-solving oriented. The classroom environment should provide for the regular study of mathematics focusing on the development and integration of mathematical thinking, reasoning, understandings and relationships through concrete problem-solving experiences. Mathematical concepts should be integrated with other subject areas, making use of natural connections wherever they occur.
- Develop children's confidence in their mathematical abilities. Varied instructional strategies, meaningful child-related contexts and opportunities for active participation in the learning process encourage children to become capable mathematical thinkers and to believe in themselves as such.
- Include ongoing assessment. Teachers should make instructional decisions based on the progress of the children in their classroom. Children's progress is determined through information obtained from formal and informal assessment of each child's individual pattern of growth. Evaluation strategies such as observations, interviews and portfolios give evidence of children's thinking processes and their understanding of concepts.

The National Council of Teachers of Mathematics recommends that those who produce, select and purchase young children's mathematics curriculum materials support developmentally appropriate early childhood mathematics programs. Guidelines for early childhood mathematics education encourage a child-centred approach to instruction. Preference should be given to mathematical learning environments that support active participation where children learn through observation, exploration, verbalization and hands-on experiences. The focus of instruction should be on the continuous development of mathematical processes and language through activities that gradually increase in difficulty, complexity and challenge as children develop understanding and skills. Developmentally appropriate early childhood mathematics instruction should meet the needs of individual learners at different stages of readiness by considering the influences of cultural backgrounds, prior experiences, learning styles and cognitive abilities. ▲

—Art Jorgensen

Request for Photos

I am putting together an album of pictures of interest to math teachers. This album will be exhibited at future conferences and fairs for your enjoyment.

If you have pictures that you would like to share of students and/or teachers involved with math activities, or pictures from past math conferences, fairs and so on, please mail them to me. Include a brief caption, including names of people, events, dates and so on. Thanks.

—Bryan Quinn
Issues Director

From the President's Pen

Happy New Year! I hope that everyone had an enjoyable holiday break and that you all survived the January deep freeze with your sanity and good humor relatively intact.

As I write this, your executive is preparing to meet in Red Deer for its annual Thinkers' Conference, a weekend of evaluating our past year and planning future activities and directions. We will be spending considerable time and thought as to how we can most efficiently meet our members' needs in these days of ever-increasing budget constraints. Teachers from a number of areas in the province have expressed concern over the decrease or total elimination of consultant time, and, of course, everyone is concerned about what may happen to present levels of professional development funding. These concerns affect most especially our planning for future conferences and mini-conferences. In the next *Newsletter*, I will share with you the results of our deliberations.

In November, presidents of 20 specialist councils met in Red Deer to discuss issues raised at the presidents' sessions of the ATA Summer Conference over the last four years. As a result, two groups of recommendations were compiled for consideration by individual councils. One set deals with conferences—a great deal of interest was expressed in the concept of joint conferences—and the other deals with the possible inclusion of specialist councils in some ATA decision/policy-making. These recommendations will also be discussed at the Thinkers' Conference.

Watch for exciting developments in the area of curriculum at Alberta Education. Revisions of programs are under way at all levels, and although time lines are still tentative, you can expect to see at least draft program outlines by fall 1994 in almost all courses.

Below is information about the upcoming NCTM regional conference in Edmonton. It's going to be an exciting conference with speakers coming from all over North America. Wouldn't it be wonderful if every math teacher in your school could attend? Perhaps you can influence "the powers that be" to declare October 21, 1994, a professional development day. Start lobbying now! ▲

—Wendy Richards

CHANGING SNOITCERID

MCATA's next annual conference will be the NCTM Canadian Regional Conference to be held October 20–22, 1994, in Edmonton. Of the 150 workshops and sessions, half of them are for elementary mathematics teachers. Speakers include Kathy Richardson from Bellingham, Washington; Maria Klawe from the University of British Columbia; NCTM president Mary Lindquist from Columbus, Georgia; and David Clarke from Melbourne, Australia.

At the opening session on Thursday evening, October 20, Mary Lindquist will provide some opening words, and then we will have a chance to look at mathematics through comedy!

The theme for the social events will be "Festival Time in Festival City."

Registration information will be available in July 1994. Each school in Alberta will receive registration information. You can also watch this newsletter for information. Phone Florence Glanfield at 427-0010, ext. 410, or Marge Marika at 433-0692 if you wish more information.

Plan on attending!

MCATA Executive Profile: Art Jorgensen

What an energetic, involved citizen and dedicated educator he is! To mention only the highlights of Art's illustrious career, I would require far more room than my allocation of space will permit. Just a second . . . Art **is** our MCATA newsletter editor. I could get away with eight pages easily: one for every year he has been our editor . . . and another eight or nine because of his stretch as secretary (1975–83), not to mention his term as vice president (1987–88).

Art was awarded his B.Ed. and B.A. degrees from the University of Alberta and earned his M.Ed. and Ph.D. from the University of Oregon. He has held numerous teaching, administrative and consultant positions throughout Alberta, including Edson, Drayton Valley, Bonnyville, Duffield and Grande Prairie. The list of his ATA involvements, speaking engagements and history of volunteer and community activities is overwhelming! Most recently, he chaired the ATA's Blue Ribbon Panel to evaluate Math 30 examination results (1993).

This deserving man has enjoyed numerous awards and recognitions. They include, inter alia, School Administrator of the Year (1977), Life Member of NCTM (1981), Citizen of the Year for Edson (1984), MCATA Outstanding Mathematics Educator (1988), and he was presented with the ATA's highest award: Honorary Membership in the Association in 1991.

Art has shared much, too, with those abroad. With the Inter-American Development Bank, he served as math consultant in Kingston, Jamaica (1986–87), and he participated in Project Overseas: Jamaica (1968), Zimbabwe (1988), Liberia (1990) and Swaziland (1991, 1993).

Now I understand his comment to us at a Calgary Oriental restaurant during our last annual math conference. (P.S. Good job with it, Bob Michie!). He declined the rice bowl as it was passed his way and moaned: "No, thanks. I've had enough of that to last me a lifetime!" Maybe, too, that's where Art may have read his favorite one-liner (from a fortune cookie?!): "The smallest good deed is better than the greatest good intention."

Art's cheerful disposition and his sense of humor are greatly appreciated. Has he told you his favorite joke? The new minister (I don't think he meant Halvar) was touring the neighborhood and getting himself acquainted. At one house, a female voice from inside asked, "Is that you, angel?" The minister hesitated a moment and then replied, "No, but I happen to be from the same department!"

When I asked Art about his goals for the future, he replied: "To continue to live each day to the fullest. There are so many interesting challenges out there." In a moment of reflection, Art offered: "I look back with fondness on my many years of involvement with MCATA. I am a much better person because of the support provided by the many outstanding people with whom I have had the pleasure to be involved."

Art, thank you for being an outstanding role model, for being an inspiration and for the message you offer to our members: "The best inheritance a teacher an give to his or her students is a few minutes of special time each day." ▲

—Bryan Quinn

The Right Angle

The following resources have been approved for Mathematics 31.

Basic Learning Resources

- *Calculus: A First Course* by James Stewart, Thomas M.K. Davison and Bryan Ferroni. Toronto: McGraw-Hill Ryerson, 1989. ISBN 007596011. LRDC 262006
- *Calculus: A Problem-Solving Approach* by Neal Reid, Douglas Mark, Phil Feldman, Russell Garrett, Joseph Geiser and David Handley. Toronto: John Wiley & Sons, 1988. ISBN 0471795904. LRDC 262030

Authorized Teaching Resource

- *Single Variable Calculus, Second Edition* by James Stewart. Pacific Grove, Calif.: Brooks/Cole, 1991. ISBN 0534145329. LRDC 262048

In addition, the approval of the computer software Zap-a-Graph has been extended from Mathematics 10–20–30 to include Mathematics 31. Contact LRDC at 427-2767 for costs.

The above resources support the revised Course of Studies: Mathematics 31, which is being field validated during the second semester of 1993–94 school year. The Course of Studies: Mathematics 31 will be available for implementation in September 1994 followed by provincial implementation in September 1995. Copies of the draft Course of Studies: Mathematics 31 were sent out to all superintendents and high school principals on January 7, 1994. For further information, phone Hugh Sanders or Jack Edwards at 427-2984. ▲

—Florence Glanfield
Alberta Education Representative

NCTM's Annual Meeting

For four days, April 13–16, 1994, teachers at all levels will gather in Indianapolis to share expertise. Their common goal is implementing the Standards in the classroom. "Linkages," the theme of NCTM's 72nd Annual Meeting, emphasizes this camaraderie and focuses on making the "mathematical connection."

Three strands will connect the convention's seminars to practical classroom implementation: linking classrooms with communities, instruction with curriculum and assessment and teachers to teachers. Some presentations on the theme will include mathematical links within a curriculum area to other disciplines, to business and industry and to other countries. Also addressed will be the importance of links between elementary and middle school teachers and between rural and inner-city teachers as well as a focus on methods that encourage sharing.

Thomas A. Romberg, of the Wisconsin Center for Education Research, will present the keynote address on "NCTM's Standards: Linkages to the Past, Present and Future." He will speak about current reform efforts, including NCTM's development of standards for the mathematics curriculum and teaching and for evaluation, and assessment. Romberg will trace how these standards link to previous recommendations for reform, to current political reform efforts and to the challenges that remain in the future.

The banquet program features the Singing Hoosiers, a 44-year-old tradition on the campus of Indiana University. This group of student performers gives concerts of American popular songs, sophisticated jazz and choreographed production numbers.

Closing the meeting will be Thomas A. Fleming, the 1992 Teacher of the Year. His presentation, "Helping Students Understand We're All in This Together," will focus on classroom dynamics that, according to

Fleming, "must emphasize collaborative strategies and a commitment to the development of the individual within a support group." Fleming will discuss the many opportunities that mathematics provides to engage students in higher-order, cooperative problem solving while linking them to the resources of our diverse society and the global community. Additionally, attendees will witness change in progress as NCTM President Mary M. Lindquist passes the gavel to President-Elect Jack Price, who will serve as NCTM president from April 1994 to April 1996.

NCTM's 72nd Annual Meeting features an innovative program with new sessions that cater to the various learning preferences and needs of each attendee. New for this year's convention are "activity sessions." Also new this year are the "Conference Within a Conference" sessions and informal poster sessions.

The convention will take advantage of the newly completed Indiana Convention Center and Hoosier Dome by offering an expanded exhibit area that will allow attendees to learn about new textbooks, software, manipulatives and other teaching materials. ▲

(From *NCTM News Bulletin*, January 1994.)

A Slice of Life Comes to Math Class

What does making a kite have to do with math? A lot, when you think about it.

That's what math teachers help Grade 2 students do at Church Street Elementary School in White Plains, N.Y. The children design kites on computers and construct them measuring the kites' area through calculations. Then they measure the width of the wood and plastic they need. In the process, students develop problem-solving skills. They not only practise basic mathematical operations but also discover their applications to real life. The students at Church Street, and hundreds of other elementary schools around the country, are part of the most comprehensive overhaul of mathematics education in 30 years.

The most recent changes began in the '80s when NCTM responded to mounting cries of alarm from business leaders, lawmakers and parents who worried that American high school graduates lacked the math and problem-solving skills needed to compete in the global marketplace.

In response, the Council developed new Standards from math instruction that have been adopted in more than 41 states.

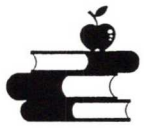
The Standards call for conjecturing, inventing and problem solving rather than finding answers by rote; developing mathematical reasoning instead of memorizing formulas; and cooperative rather than individual learning. This approach also connects mathematics and its applications to the real world, rather than viewing it as an isolated discipline.

Even the traditional math problems have changed. Remember problems like this? "Susie has two quarters. John has three dimes. Joey has a nickel. How much money do Susie, John and Joey have together?" Today, the question designed to get students to reason and communicate as they figure out the answer would be framed this way: "I have some pennies, nickels and dimes in my pocket. I put three coins in my hand. How much money do you think I have? Can you list all the possible amounts I have when I pick three coins?"

This real-world approach to mathematics is most important in the early grades when children must develop the reasoning and critical-thinking skills they need to succeed in high school and the workplace. The aim is to move math from narrow focus on routine skills to a discipline that will enhance every area of our children's lives. ▲

(From *News USA*)

Publications



- *The Resource Guide to Educational Issues* lists national studies, reports and books that focus on math and science education. For a free booklet, send a self-addressed stamped envelope to Resource Guide, InfoMedia, Box 210, Ellenton, FL 34222.

- *SpaceMet* is a free electronic bulletin board for teachers. For more information, contact Mary Alice Wilson, Five Colleges, Inc., P.O. Box 740, Amherst, MA 01004.

- *Can You Find the Math?* is an interactive classroom poster for Grades 4 to 8, accompanied by a 24-page teacher's guide. To order your free poster, call D.C. Heath at (800) 235-3565, ext. 1945.

- *Helping Your Child Learn Math* is a free booklet. Order from R. Woods, Consumer Information Center, Pueblo, CO 81009. For bulk orders, the booklet is available in packages of 10 for $5 from D.C. Heath & Co., 2700 North Richardt Avenue, P.O. Box 19309, Indianapolis, IN 46219; phone (800) 334-3284; fax (800) 824-7390. Ask for order code 31452-8.

- *Opportunities to Learn: Effects on Eighth Graders of Curriculum Offerings and Instruction Approaches* reports on middle school students exposed to problem-solving activities in mathematics class. This 50-page book costs $4.40. Contact the Center for Research on Effective Schooling for Disadvantaged Students, Johns Hopkins University, 3505 N Charles Street, Baltimore, MD 21218. (Cite report no. 34.)

- *Creating a Flexible and Responsive Learning Environment for General Mathematics Students* reports that active learning techniques promote meaningful thought in mathematics—even among students who appear uninterested in the subject. The 31-page book costs $6.10, plus $1.00 postage and handling. Order from the National Center for Research on Teacher Learning, 116 Erickson Hall, Michigan State University, East Lansing, MI 48824-1034. (Cite order no. TL-RR-92-7.)

- Women mathematicians and scientists are the subjects of posters and books available from the National Women's History Project. For a pamphlet that describes the products, write to the National Women's History Project, 7738 Bell Road, Windsor, CA 95492; phone (707) 838-6000.

- Twenty-seven posters that feature women who chose careers in mathematics- and science-related fields are available. For a brochure describing the products, write the Organization for Equal Education of the Sexes, Inc., P.O. Box 438, Blue Hill, ME 04614; phone (207) 374-2489.

- "Nutrition . . . It's Elementary," a series of classroom-tested teaching strategies that link lessons in good nutrition to mathematics, science, art, music and language arts, is available from the National Dairy Council. This free series is geared toward the primary and intermediate grades. Phone your nearest Dairy Council at (800) 426-8271.

- *Professional Development for Teachers of Mathematics: 1994 Yearbook* is currently in production and will be available in April. Orders are now being taken. The yearbook provides a stimulating collection of articles on the professional development of teachers of mathematics. Order from NCTM, 1906 Association Drive, Reston, VA 22091-1593; phone (703) 620-9840, fax 476-2970.

(From *NCTM News Bulletin*, January 1994).

NCTM Materials

Do you need some neat ideas? Do you want to keep current with great resources? Reward your students with special prizes!

The following special-member products and publications are available through MCATA. These are also listed in the recent catalog of NCTM educational materials. MCATA gets a rebate for all materials sold. Other materials can also be ordered. Prices do not include GST. For further information, contact Richard Kopan, 72 Sunrise Crescent SE, Calgary T2X 2Z9; phone 254-9106 (res.), 299-7520 (bus.), fax 299-7529.

Special-Member Products

Title	Price (Cdn)
Power Bags	$23.56
Painter Caps	3.38
Power T-Shirts	16.81
Power Stickers	.68
Stamps: I Love	4.73
Post Its	1.01
Pens: I Love	8.44
Buttons: Power	1.28
Note Pads: Power	.88
Pencils (10): I Love	3.38
Stickers: I Love	.68
Pencils (10): Power	3.38
Pens: Power	5.06

Publications

Addenda Series

Kindergarten	$12.83
First Grade	12.83
Second Grade	12.83
Third Grade	14.85
Fourth Grade	14.85
Fifth Grade	14.85
Sixth Grade	15.53
Geometric Spatial Sense (K–6)	12.83
Patterns (K–6)	12.83
Making Sense of Data	12.83
Number Sense and Operations	12.83

Grades 5 to 8

Development of Number Sense	$14.18
Dealing Data and Chance	20.25
Geometry and Middle Grades	20.25
Patterns and Functions	17.55

Grades 9 to 12

Connecting Math	$12.83
Geometry from Multiple Perspective	18.90
Data Analysis and Stats	20.25
Core Curriculum	22.95
Fractals Text, Part 2	39.15
Fractals Workbook, Part 1	26.93
Fractals Workbook, Part 2	26.93
Spreadsheet Act.-Middle School	30.38
Spatial Sense-At	6.75
Organizing Data 5–8	13.50
Number Sense- At- 5–8	6.75
Manipulatives-At	6.75
Data Analysis-Mt-5–9	6.75
Assessment -At Focus	6.75
Implementing K–8 Curr. and Eval.	10.13
Alt. Assessment-Mt-Theme	6.75
Guidelines Calculator Use	10.13
Problem Solving with Calculato	6.75
Problem Solving Techniques	6.75
Choose and Create Good Problem	11.48
Polyhedron Models	15.53
Micros- Geometry	8.10
Algebra for Everyone	10.80
Paper Folding	7.43
Projects to Enrich, Level 1	19.58
Projects to Enrich, Level 3	14.85
Ideas from At 1–4	15.53
Ideas from At 6–8	15.53
Teacher Made Aids for Elem.	16.20
Problem Solving Tips At	11.48
How to Teach Using Calculator	10.80
How to Teach Per, Area, Volume	10.13
Assessment- Myths, Models	11.48

Salute Mathematics During Mathematics Education Month

A free Mathematics Education Month Power Kit, full of innovative ideas and useful materials, is available from NCTM headquarters to help you plan promotions and mathematics-related activities in your school and local community.

NCTM's Power Kit contains a list of ideas and activities to implement in your community. It also contains a Mathematics Education Month proclamation signed by NCTM President Mary M. Lindquist, *USA Today's* "Math Is Front-Page Stuff" activity poster, NCTM's "Numbers" guide for selecting special "Math Power for All" promotional items, parental involvement materials and much more.

Mathematics Education Month is proclaimed each April as a time to promote mathematics awareness through cross-curriculum activities connecting mathematics to real-world situations. In addition, it is an opportunity to stimulate student, parent and community excitement and involvement in mathematics. It is also an opportunity for all to work together toward excellence in mathematics. To receive your free Mathematics Education Month Power Kit, write to the NCTM Headquarters Office, Dept. M., 1906 Association Drive, Reston, VA 22091-1593; phone (703) 620-9840, fax 476-2970. ▲

On the Lighter Side

Optimists: People who set aside just two hours to do their income tax returns.

Pessimists: People who expect nothing on a silver platter except tarnish.

Math Activities

These activities are designed to speak directly to students, giving them open-ended questions intended to engage their intellect through their interests. Students are encouraged to work on the activities individually, in pairs or in small groups. No answers are provided for the questions so that students are encouraged to be the mathematical authority, to develop the confidence and critical-thinking skills necessary to validate their thinking.

K to 2

Circus animals. Use tangram pieces to make a lion, monkey or any other circus animal. Read *Grandfather Tang's Stories* by Ann Tompert (New York: Crown Publishing Group, 1990) to see other tangram animals. Compare your animal with those in the book. How are they alike? How are they different? Hide your animal behind a piece of paper so you can see it but one of your classmates cannot. Give your classmate step-by-step instructions so that she or he can make an animal just like yours. How accurate is the new animal? Ask your classmate what direction was the most helpful and what direction might have been confusing. Try it again!

Grades 3 to 5

The logical circus. Solve the following logic problem and then create your own circus-logic problem. Flowerina, Gustacio and Bill are circus clowns and they each use only one special prop: a leaky bucket, a flower that squirts water or a miniature car. Use the clues to figure out which clown uses each prop:
(1) Flowerina's best friend is the clown who wears the flower, (2) Bill is Flowerina's best friend and (3) Bill helped Flowerina repair the brakes on her prop.

Grades 6–8

Get your tickets. You are in charge of the ticket booth. During the first day, one-half of the tickets were sold. During the second day, one-half of the *remaining* tickets were sold. On the third day, one-third of the *remaining* tickets were sold. On the fourth day, the *remaining* 2,000 tickets were sold. How many tickets were sold in all? One-third of the tickets sold were adult tickets; two-thirds of the tickets were for children. If adult tickets cost $7.50 each and children's tickets cost $4.00 each, how much money did the circus make on ticket sales? In your journal, describe how you solved these problems. ▲

(From *Arithmetic Teacher*, January 1994.)

Measuring What Counts

The Mathematical Sciences Education Board of the National Academy of Sciences recently released a new report that puts educational principles at the forefront of mathematics assessment and establishes crucial research-based connections between assessment and national standards. *Measuring What Counts: A Conceptual Guide for Mathematics Assessment* explores the research base underlying three fundamental principles that must be met for assessments to measure the mathematics learning that counts now and into the 21st century:

- Content Principle. *Assessment should reflect the mathematics most important for students to learn.* The multiple-choice tests so common today give the impression that mathematics consists of narrow, isolated facts and skills. Mathematics is much more than arithmetic, however. It is finding, making and describing patterns. It is devising and solving challenging problems. It is justifying and communicating about solutions. Assessments need to reflect this broader view of mathematics.
- Learning Principle. *Assessment should enhance mathematics learning and support good instructional practice.* To support standards, assessments should be more like learning. They should provide opportunities for students to analyze data, draw contrasts and make connections. They should allow students to work in groups, to pursue open-ended questions, to construct hypotheses and argue viewpoints and to use the power of calculators and computers—skills that are vital in the workplace and in adult life.
- Equity Principle. *Assessment should support every student's opportunity to learn important mathematics.* In the 21st century, everyone will need mathematics to live and work. Therefore, every student must have an opportunity to learn important mathematics, must be assessed on important mathematics and must be held to be the same high standards of accomplishment. Assessments must be flexible enough to accommodate differences in how students manifest mathematical understanding, while still challenging the upper reaches of every student's mathematical thinking.

The report's message is simple, but its implications are profound: assessment in support of standards must not only measure results but also must contribute to the educational process itself. A companion *Policy Brief* provides highlights of the full volume. Single copies of *Measuring What Counts* are available through the National Academy Press at $17.95 for the full volume and $3.95 for the Policy Brief, plus shipping and handling. Quantity discounts are available. To order by phone using VISA, MasterCard or American Express, call the National Academy Press at (202) 334-3313 or toll free at (800) 624-6242. ▲

New Mathematics Teaching Resource Available

Kraus International Publications (Millwood, N.Y.) announces the publication of the *Mathematics Teacher Resource Handbook*, a time-saving, one-stop tool for math educators. It provides the practical information and resources mathematics teachers, administrators and curriculum developers need for revising current math programs, as well as developing new curriculum and lessons. The methods and materials discussed are appropriate for K to 12 mathematics at the district, school and classroom levels.

The book offers a wide range of information in one inexpensive volume, including discussions on current trends, standards and research; math curriculum design; important topics and integration throughout the curriculum; funding sources; assessment; recommended children's books and curriculum materials; publishers and producers of materials for math instruction; ideas and resources for special math projects; and an analysis of state frameworks.

Many mathematics specialists have contributed their practical experience and knowledge to this book. Among the authors are Charles E. Lamb (University of Texas), Barbara Montalto (Texas Education Agency), Elizabeth Badger (Massachusetts Department of Education) and Jay Stepelman (formerly of George Washington High School, N.Y.).

The Mathematics handbook is just one in a new series from Kraus. So far, the other books in the series cover environmental education, science, social studies, English/language arts, English as a second language, early childhood education, health and visual arts. More books are planned for the series.

The resource handbook series has already earned Kraus "The Districts' Choice Award" from *Curriculum Product News*. Given for "contributing to the education of American students through the development and introduction of superior and innovative instructional products," the award places Kraus's publications among the "Top 100 Products of the Year."

The 459-page handbook costs $19.95, plus shipping and handling. Bulk discounts are available. Visa/MasterCard orders are accepted. Send orders to Kraus International Publications, 358 Saw Mill Road, Millwood, NY 10546-1035; phone (914) 762-2200, (800) 223-8323, telex 6818112KRKP, fax (914) 762-1195. ▲

Try This One!

Problem

Todd and Steven play a game by alternating choosing a previously unselected number from (1,2, . . . ,n), where n is a positive integer. Steven chooses first, and the game continues until all numbers have been selected. Steven wins if and only if the sum of the numbers he has chosen is even. For which n can Steven force a win?

Answer

Todd wins if and only if the remainder when n is divided by 8 is 1, 3 or 4.

(From the 1992–93 AHSMC, Part II.)

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 Mathematics Council Newsletter is published several times yearly by the ATA for the Mathematics Council. Editor: Art Jorgensen, 4411 Fifth Avenue, Edson, Alberta T7E 1B7. Editorial and production services: Central Word Services staff, ATA. Address all correspondence to the editor. Authors' opinions are not necessarily those of MCATA or the ATA. ISSN 0823-117

IDEAS

Name _____

Clothes Homework—Make Those Outfits

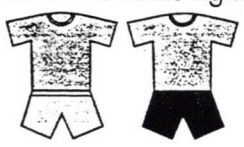
Dear Family,

In the mathematics classroom, your child has been exploring different possible combinations of items. Many of these real-world-related problems could clearly be seen by the student if they were acted out. Please help facilitate the process by selecting the clothing items necessary and allowing your student to combine them in all possible ways.

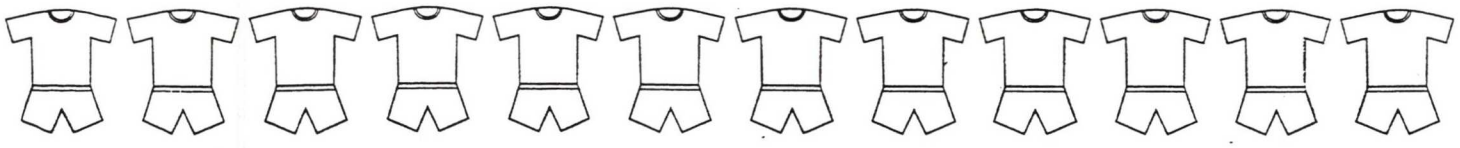
Find out how many different outfits you could make by completing the following chart. Before doing this, go through the coloring activity below the chart.



Number of shirts	Number of shorts	Total number of different outfits
2	2	
3	4	
6	2	
4	5	
5	5	
4	6	

Keep track of your discoveries by recording the possible number of outfits in the rightmost column. For example, with one shirt  and two shorts  , two outfits  could be made.

Color an example of two shirts and three shorts below.



Then return to the chart and make the outfits.

For the older student

Ask your child to figure out how many outfits can be made with eight shirts and ten shorts. Or with 100 shirts and 95 shorts. Can he or she figure out how many outfits can be made with *A* number of shirts and *B* number of shorts? _____

What generalizations can your child make? _____

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NCTM LAUNCHES

First Issue of

Mathematics and the Middle Grades

April 1994

Let's Make History Together

NCTM is proud to announce a new resource for students, teachers, and mathematics educators. This journal will address the learning needs of all middle school students, the demands these needs place on their teachers, and issues that capture the vitality of mathematics and the characteristics of the middle-grades student. The new journal will focus on intuitive, exploratory investigations that help students develop a strong, conceptual mathematical base. Such a foundation leads to greater mathematical abstraction, as appropriate for middle school grades.

Call for Manuscripts

Sharing ideas about middle-grades mathematics teaching

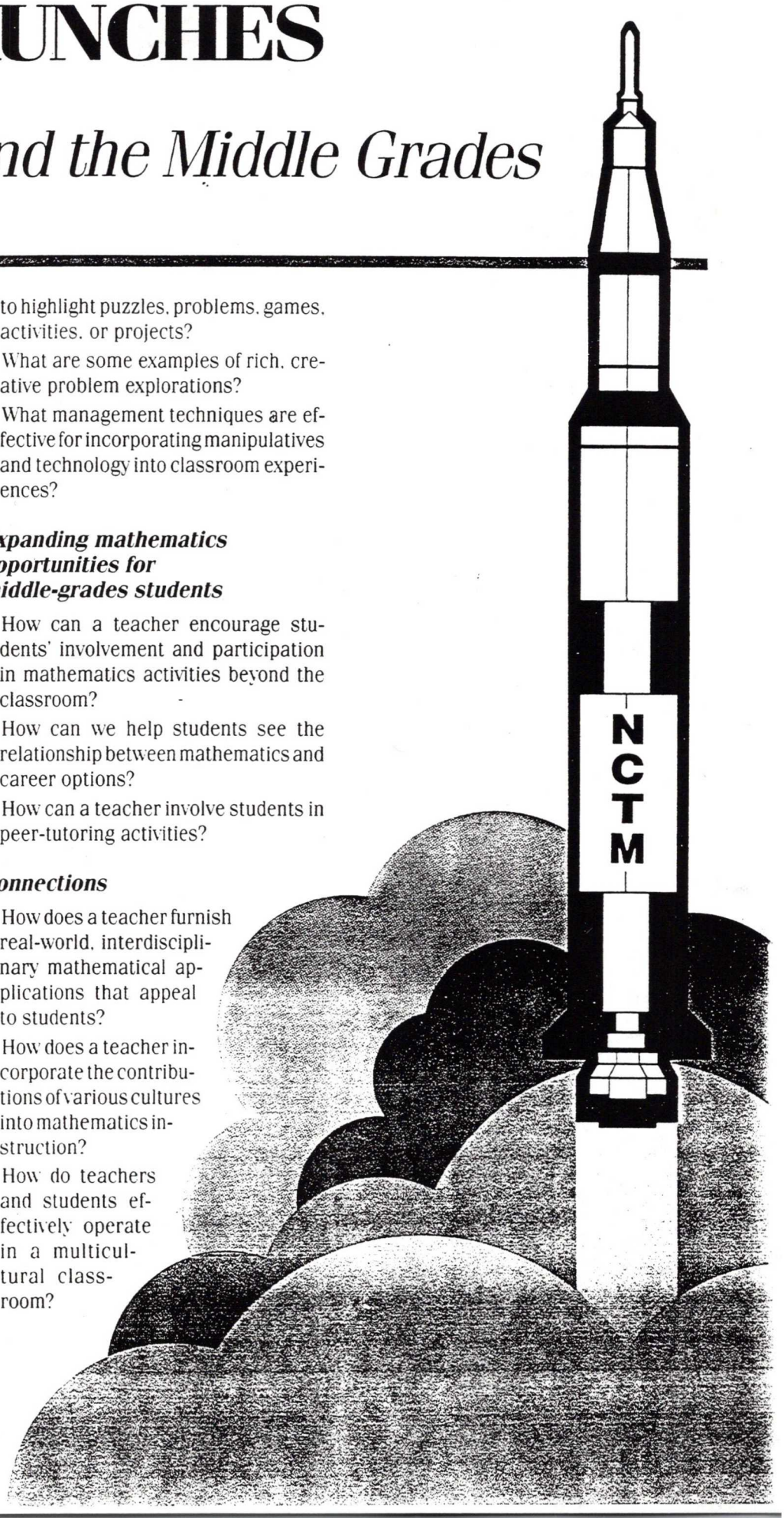
- What kinds of specific challenges do teachers in the middle grades face in teaching mathematics and how have they met these challenges?
- What are some creative ways to open and close lessons?
- What does research suggest about teaching in the middle grades?
- What preliminary mathematics experiences are essential for students before they are exposed to the more formal investigations of algebra or geometry?
- How do remediation or acceleration approaches become barriers that hinder the conceptual development of a full mathematics curriculum and access to mathematical power for students? What are some effective alternatives available to teachers?
- Which of your ideas could be included in a bulletin board or monthly calendar to highlight puzzles, problems, games, activities, or projects?
- What are some examples of rich, creative problem explorations?
- What management techniques are effective for incorporating manipulatives and technology into classroom experiences?

Expanding mathematics opportunities for middle-grades students

- How can a teacher encourage students' involvement and participation in mathematics activities beyond the classroom?
- How can we help students see the relationship between mathematics and career options?
- How can a teacher involve students in peer-tutoring activities?

Connections

- How does a teacher furnish real-world, interdisciplinary mathematical applications that appeal to students?
- How does a teacher incorporate the contributions of various cultures into mathematics instruction?
- How do teachers and students effectively operate in a multicultural classroom?



- How does a teacher help students establish and maintain a broad perspective of mathematics topics as interconnected?

Assessment in middle-grades mathematics programs

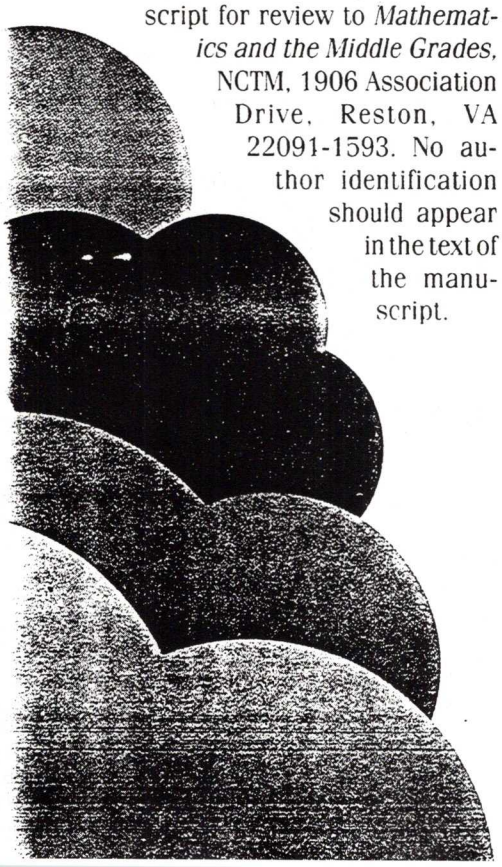
- How can teachers use assessment to enhance learning?
- How can teachers assess their own teaching and determine possible directions for continuous professional development?
- How can teachers communicate about students' progress with students, parents, and administrators?

Professional development for middle-grades teachers

- What approaches are successful for preservice and in-service teacher education?
- How can teachers' empowerment be facilitated by in-service training?
- How can we help teachers translate positive workshop experiences into effective, ongoing classroom practices?
- How can peer coaching, mentoring, and leadership-development models be used effectively?

To contribute to this historic event, please select one of the following two options:

- Submit five copies of a completed manuscript for review to *Mathematics and the Middle Grades*, NCTM, 1906 Association Drive, Reston, VA 22091-1593. No author identification should appear in the text of the manuscript.



- If you have an idea for an article (or a series of problems, classroom experiences, etc.) but do not feel ready to complete a manuscript, please send a self-addressed, stamped envelope requesting the *Manuscript Proposal Guide* that is designed to offer first-time authors assistance in organizing and describing their work.

Middle-Grades Educators, Don't Miss This Unique Opportunity

In April 1994, the National Council of Teachers of Mathematics will begin publishing a new journal for mathematics and the middle grades. This resource for middle-grades educators and their students will promote a curriculum that captures both the vitality of mathematics and the characteristics of students in the middle grades. Recognizing how middle-grades students learn, this journal will focus on intuitive, exploratory investigations using informal reasoning intended to help students develop a strong conceptual basis leading to greater mathematical abstraction. Share your special strengths! Join this network of educators as this new venture begins! You can make a difference in many ways. Complete the form below and send it in today!

Count me in! I would like to be involved in the new middle school journal in the following ways:

☐ I would like to develop a manuscript. Please send me additional information to get started.

☐ I am willing to serve as a referee of manuscripts submitted for potential publication.

☐ My idea for a regular department or series for the journal is _____

_____

_____

☐ I suggest the following valuable topics for this journal: _____

_____

_____

☐ I suggest the following potential authors (include address):

Name _____	Name _____
Address _____	Address _____
_____	_____
Topic _____	Topic _____
Name _____	Name _____
Address _____	Address _____
_____	_____
Topic _____	Topic _____

My name _____

Address _____

Present position _____

Please send this completed form to **NCTM, *Mathematics and the Middle Grades*, 1906 Association Drive, Reston, VA 22091-1593.**

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