

$$6 - 4 + 16$$

$$3 \times 12 \div 7$$

$$621322$$

$$1234567$$

$$16 - 3 \sqrt{144}$$

$$\sqrt{124792}$$

$$\frac{x}{5} \cdot \frac{6}{3} \div \frac{4}{12} - \frac{16}{7}$$

$$7654321$$

$$51322$$

$$144 \times 10 - 16$$

$$12345678$$

$$16 + 3 \sqrt{144}$$

$$X \times A - B + C = \underline{\quad}$$

$$5 - 3 + 12 - 17$$

$$144 \times 10 - 16$$

$$4367 \times 10$$

$$4 \times 37 - 4 + 7$$

$$345 - 43 \frac{1}{2}$$

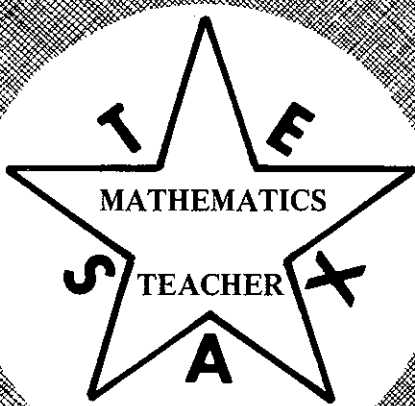
$$6 - 4 - 16$$

$$16 + 3144$$

$$78.932 \times 145$$

$$560.117$$

$$4 - (5 \times 3)$$



■ TEXAS MATHEMATICS TEACHER is the official journal of the Texas Council of Teachers of Mathematics. The views expressed are the contributor's own and are not necessarily those of the publisher or the editor. All manuscripts and correspondence about this publication should be addressed to Mr. J. William Brown, *Texas Mathematics Teacher*, 100 So. Glasgow Drive, Dallas, Texas 75214.

PRESIDENT:

Betty Travis
401 Crestwind
San Antonio, TX 78239

VICE-PRESIDENTS:

Kay Pranzitelli
Irving I.S.D.
Irving, TX

Judy Tate
6208 Irvington
Houston, TX 77022

Carolyn Felux
5026 David Scott
San Antonio, TX 78219

SECRETARY:

Dr. John Huber
1819 Renee
Edinburg, TX 78539

TREASURER:

Bettye Hall
Mathematics Dept.
3830 Richmond
Houston, TX 77027

PARLIAMENTARIAN:

Dr. Wayne Miller
5405 Lorraine
Baytown, TX 77521

JOURNAL EDITOR:

J. William Brown
3632 Normandy
Dallas, TX 75205

N. C. T. M. REPRESENTATIVE:

George Willson
2920 Bristol
Denton, TX 76201

REGIONAL DIRECTORS OF T. C. T. M.:

SOUTHEAST: Cathy Rahlfs
7200 W. Tidwell
Houston, TX 77092

SOUTHWEST: Diane McGowan
Route 1, Box 259
Cedar Creek, TX 78612

NORTHWEST: Byron Craig
2617 Garfield
Abilene, TX 79601

NORTHEAST: Tommy Tomlinson
2227 Pollard Drive
Tyler, TX 75701

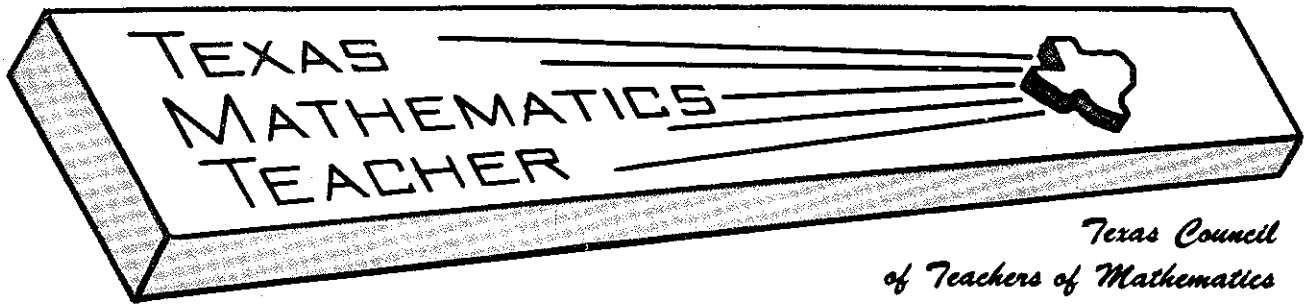
TEA CONSULTANT:

Alice Kidd
6802 Shoal Creek Blvd.
Austin, TX 78734

NCTM REGIONAL SERVICES:

Mary Hatfield
Mathematics Consultant
936 New York
Lawrence, KS 66044

TEXAS MATHEMATICS TEACHER is published quarterly by the Texas Council of Teachers of Mathematics. Payment of membership fee of \$5.00 entitles members to all regular Council Publications.



Volume XXXI

OCTOBER, 1984

No. 4

PRESIDENT'S MESSAGE

September 1984

Dear TCTM Members,

I hope you all had an enjoyable summer and are eagerly anticipating a successful school year for 1985-1985. Be sure and mark your calendars for the exciting events to be held this year. CAMT promises to be yet another magnificent conference; a statewide Algebra conference is planned for January in Huntsville; and NCTM will hold its national meeting in San Antonio April 17-20th. A special interest group on the History of Mathematics will meet April 15-17th in San Antonio, prior to the NCTM meeting. This group consists of classroom teachers who now use or wish to use topics from the history of mathematics. Many have produced their own set of classroom modules and will have these available to share.

NCTM elections will be held soon. Please become aware of the qualifications of the candidates and vote for the candidate of your choice.

TCTM is changing and growing. We have exciting plans for our group - but as always, changes take time. Please be patient with us as we try to improve our services to you. Your input and help is always appreciated.

TCTM will be selling NCTM materials at the April 17-20th meeting in San Antonio. We need your help!! If you can help us in any way during these days, please fill in the information below and send to me as soon as possible.

(Detach and mail ASAP.)

I can help with the sale of NCTM materials!

NAME: _____

ADDRESS: _____

PHONE: _____ (HOME)

_____ (WORK)

DAYS I CAN WORK: _____

MORNING

EVENING

TCTM Journal needs articles for all levels of Mathematics.

CONFERENCE FOR THE ADVANCEMENT OF MATHEMATICS TEACHING OPERATIONAL GUIDELINES

SPONSORING ORGANIZATIONS

Sponsoring organizations for CAMT include the following:

- Texas Council of Teachers of Mathematics
- Texas Association of Supervisors of Mathematics
- Texas Education Agency
- Faculty in Mathematics Education, The University of Texas at Austin
- Department of Mathematics, The University of Texas at Austin

STEERING COMMITTEE

The Steering Committee shall be the governing body for the Conference for the Advancement of Mathematics Teaching (CAMT). The purpose of this committee shall be to provide leadership for CAMT to be held annually in Austin, Texas.

MEMBERSHIP/TERM: Membership of the Steering Committee shall consist of one person from each of the sponsoring organizations and the current Conference Coordinator. Each sponsoring organization shall designate its representative to serve on the committee. The term of each representative shall be determined by the sponsoring organization. The Conference Coordinator shall not serve as an organization representative to the Steering Committee but shall serve as a non-voting member of the Steering Committee.

OFFICERS: The Steering Committee shall elect annually a Chairperson and a Secretary at the meeting to be held between October 1 and December 31.

MEETINGS: There shall be at least two meetings of the Steering Committee per year. One meeting shall be held within one month following the conference.

RESPONSIBILITIES: Responsibilities of the Steering Committee shall be:

- to appoint the Conference Coordinator
- to approve chairpersons of all Operational Committees based on recommendations of the Conference Coordinator
- to serve in an advisory role to the Conference Coordinator for the planning, implementing, and evaluation of the Conference
- to appoint the Treasurer and direct the financial aspects of the Conference, carry-over monies, and approve the budget for each Conference
- to maintain minutes of Steering Committee proceedings
- to have one member available in the registration area at all times during the conference to respond to questions or problems

OFFICERS

Conference Coordinator

SELECTION/TERM: The Conference Coordinator shall be appointed by the Steering Committee for a term of three years. This appointment shall be made one year prior to the time responsibilities are to be assumed.

RESPONSIBILITIES: Responsibilities of the Conference Coordinator shall be:

- to submit to the Steering Committee appointees for all Operational Committee chairpersons
- to arrange conference dates with the conference facilities
- to arrange room set-ups and all physical facilities for the conference
- to arrange hotel/motel room blocks and reservations through the Housing Bureau
- to sign appropriate contracts as authorized by the Steering Committee
- to distribute appropriate material to Operational Committees
- to have flyers printed and mailed

- to monitor activities of all Operational Committees
- to organize the mailing of the program booklets
- to assign complimentary hotel rooms
- to send thank-you letters to all Operational Committee members following the conference
- to collect reports from all Operational Committees for the Steering Committee

TREASURER

SELECTION/TERM: The Treasurer shall be appointed by the Steering Committee for a term of two years.

RESPONSIBILITIES: Responsibilities of the Treasurer shall be:

- to maintain records of the CAMT Account
- to maintain records and reports for tax-exempt status
- to pay all bills and expenses as approved by the Conference Coordinator
- to make available, collect, and deposit monies daily as needed at the conference
- to provide a written report to the Steering Committee following the conference

OPERATIONAL COMMITTEES

Program Committee

MEMBERS/TERM: The chairperson of the Program Committee shall be appointed by the Steering Committee for a term of one year. The Committee shall consist of the present, past, and incoming Program Chairperson and at least five Committee members appointed by the Program Chairperson.

RESPONSIBILITIES: Responsibilities of the Program Committee shall be as follows:

- Program Chairperson
 - to select five or more Committee members
 - to coordinate all Committee activities to develop a well-balanced, innovative program
 - to develop the program booklet
 - to have the program booklet printed
 - to arrange for delivery of program booklets to Austin
 - to approve all expenses to be paid for speakers, workshops, reimbursements, etc.
 - to provide a written report to the Steering Committee following the conference
- Past Program Chairperson
 - to act as advisor/consultant to the Program Chairperson
- Incoming Program Chairperson
 - to recruit presiders
 - to arrange for construction and posting of all necessary signs
- Committee Member
 - to recruit speakers for K-5 workshops, activity sessions, and presentations
- Committee Member
 - to recruit speakers for 6-8 workshops, activity sessions, and presentations
- Committee Member
 - to recruit speakers for 9-12 workshops, activity sessions, and presentations
- Committee Member
 - to recruit speakers for college presentations, including two-year college, teacher education, research, mathematics education, mathematics, etc.

- Committee Member
 - to recruit speakers for computer workshops and activity sessions
 - to arrange for appropriate computer equipment at the conference

PRE-REGISTRATION COMMITTEE

MEMBERS/TERM: The Pre-registration Committee shall consist of a chairperson and such additional members as the chairperson deems necessary. The Committee Chairperson shall be appointed by the Steering Committee for a term of two years. Committee members shall be selected annually the Committee Chairperson. The chairperson shall have the option to hire clerical assistants at an hourly wage to be determined yearly by the Steering Committee.

RESPONSIBILITIES: Responsibilities of the Pre-registration Committee shall be:

- to acquire all necessary registration materials such as receipts, envelopes, ribbons, name tags, workshop and luncheon tickets, etc.
- to prepare registration packets for speakers, presiders, committee members, exhibitors, and participants who pre-register for the conference
- to prepare an alphabetized list of persons who pre-register for the conference, including amount paid, workshops received, and luncheon tickets
- to prepare an alphabetized list of persons to receive refunds, including the amount to be refunded
- to deposit money from pre-registrations into the CAMT Account and send deposit slips to the Treasurer
- to deliver all pre-registration materials to the conference
- to prepare a written report to the Steering Committee following the conference

REGISTRATION COMMITTEE

MEMBERS/TERM: The Registration Committee shall consist of a chairperson and such additional members as the chairperson deems necessary to operate the Registration Desk at the conference. The Committee Chairperson shall be appointed by the Steering Committee for a term of two years. Committee members shall be selected annually by the Committee Chairperson.

RESPONSIBILITIES: Responsibilities of the Registration Committee shall be:

- to staff the Registration Desk at the conference
- to register conference participants
- to sell workshop and luncheon tickets
- to hold monies collected at the Registration Desk until picked up by the Treasurer
- to disperse refunds as determined by the Pre-Registration Chairperson
- to prepare a written report to the Steering Committee following the conference

EXHIBITS COMMITTEE

MEMBERS/TERM: The Exhibits Committee shall consist of a chairperson and such additional members as the chairperson deems necessary. The Committee Chairperson shall be appointed by the Steering Committee for a term of two years. Committee members shall be selected annually by the Committee Chairperson.

RESPONSIBILITIES: Responsibilities of the Exhibits Chairperson shall be:

- to contact possible exhibitors and provide them with appropriate information regarding exhibits at the conference
- to deposit fees from exhibitors into the CAMT Account and forward the deposit slips to the Treasurer
- to schedule exhibit space
- to work with the convention decorator regarding set-up for exhibits
- to submit a list of exhibitors to the Conference Coordinator

- to provide a written report to the Steering Committee following the conference

MAKE-and-TAKE/TAKE-and-MAKE WORKSHOP COMMITTEE

MEMBERS/TERM: A non-profit organization shall be appointed by the Steering Committee to organize and conduct the Make-and-Take Workshop. The term of the appointment shall be for one year.

RESPONSIBILITIES: Responsibilities of the Make-and-Take Workshop Committee shall be as follows:

- to organize and operate a center for distributing teacher-made activities and /or materials
- to maintain records of expenses and income and attempt to "break-even" with the workshop (cost of the materials for the Make-and-Take Workshop shall be paid by CAMT, income shall go into the CAMT Account, and unsold materials shall remain the property of CAMT)
- to provide a written report to the Steering Committee following the conference

EQUIPMENT AND FACILITIES COMMITTEE

MEMBERS/TERM: The Equipment and Facilities Committee shall consist of a chairperson and such additional members as the chairperson deems necessary. The Committee Chairperson shall be appointed by the Steering Committee Chairperson.

RESPONSIBILITIES: Responsibilities of the Equipment and Facilities Committee shall be:

- to check meeting room set-ups
- to distribute equipment as needed to meeting rooms
- to have someone on call at the registration area during the conference to monitor facilities and equipment breakdown
- to secure the equipment when not in use
- to prepare a written report to the Steering Committee following the Conference

HOSPITALITY COMMITTEE

MEMBERS/TERM: The Hospitality Committee shall consist of a chairperson and such additional members as the Chairperson deems necessary. The Committee Chairperson shall be appointed by the Steering Committee for a term of two years. Committee members shall be selected annually by the Committee Chairperson.

RESPONSIBILITIES: Responsibilities of the Hospitality Committee shall be:

- to plan and supervise the Conference food functions (reception, luncheon), including selection of food, luncheon floral arrangement, and ticket takers
- to invite a representative from each of the five sponsoring organizations to be present at the reception
- to provide an information center throughout the conference regarding the program, tours of Austin, listing of restaurants in the vicinity, maps, etc.
- to be a "sounding board" for grievances
- to provide a message center for those attending the conference
- to provide a lost and found area at the conference
- to provide courtesy transportation for speakers as requested by the Program Chairperson or Conference Coordinator
- to provide a written report to the Steering Committee following the conference

EVALUATION COMMITTEE

MEMBERS/TERM: The Evaluation Committee shall consist of a chairperson and such additional members as the chairperson deems necessary. The Committee Chairperson shall be appointed by the Steering Committee for a term of two years. Committee members shall be selected annually by the Committee Chairperson.

RESPONSIBILITIES: Responsibilities of the Evaluation Committee shall be:

(CONTINUED ON PAGE 6)

FLASHCARDS AND DITTO SHEETS – ONE MAN'S OPINION

by Charles E. Lamb

The University of Texas at Austin
Austin, Texas 78712

All throughout my career in mathematics education I have been wanting to write this article. Now I'm finally going to do it. Even back in elementary school, I detested the use of flashcards for basic facts and page-after-page of purple ditto sheets for practicing algorithms. As I have progressed from student to teacher to teacher of teachers, my feelings haven't changed much. In fact, they may have deepened.

The purpose of this piece is to encourage you as an elementary teacher to find other creative ideas and methods for giving children the opportunity to refine and sharpen their skills on the basic facts and standard algorithms of arithmetic. There exist several possibilities that may be used in addition to flashcard and/or ditto sheets which will provide the students in your class with effective drill and practice. Some of these will be described in the paragraphs that follow.

Drill –

- (1) **Playing cards:** By using a regular deck of cards (with the face-cards removed) children may play a variation of the childhood favorite "Battle." The children go one at a time laying down a card (alternating turns). The second player on each turn is to add his or her "number" to the "number" already played. He or she has two seconds. If unable to do this, the opponent gets the cards. If successful, he or she gets the cards. Obviously, the game could be easily changed to accommodate subtraction and/or multiplication.
- (2) **Playing dice:** Students roll a pair of dice. They add, subtract or multiply to gain or lose a point. Time limit imposed as in (1). First one to reach seven is the winner.
- (3) **Fact Bees:** A variation of the spelling-bees you had when you were a kid. Use two teams. Let the teacher call out the exercises and control the pace of the drill. As children get answers right, let them sit down. If an answer is incorrect, the child stays up and thus gets more practice.

Obviously, there are many other possibilities for fact drill. The possibilities are only limited by the classroom teacher's imagination. Some general suggestions for activities are: (1) the activity should be high-speed, (2) it should give quick feedback, (3) children should be constantly aware of their progress, (4) expect forgetting and reinforce learning appropriately, (5) build activities that encourage the use of basic fact thinking strategies (Note 1) and (6) use outside resources to locate activity ideas (Note 2).

As for the practice associated with the traditional algorithms in mathematics, it is common for children to see many ditto sheets of problems in the course of a unit in arithmetic. Again, there are many other useful options open to the teacher.

- (1) **Crossnumber Puzzles:** An attractive and amusing way to present a variety of exercises in a small space.
- (2) **Secret Code Messages:** Key answers to the alphabet and send a secret message. Most kids really seem to enjoy this.
- (3) **Word Problems:** Application of algorithmic knowledge is a good way to practice skills.
- (4) **Nontraditional topics:** Study of unique and interesting topics such as number theory, including

other bases, can provide computational practice.

Some general suggestions for practice activities are: (1) make activities fun and nonroutine, (2) make practice assignments short and frequent rather than long and spread out and (3) make problem situations realistic to students – maybe even let them pose their own.

In closing, while flashcards and dittoes are old stand-bys, we owe our students more interesting and challenging ways to refine and sharpen their skills when it comes to drill and practice. Pick activities that wouldn't bore you if you had to do them yourself. Just a couple of thoughts to consider. One, have you considered the roles which calculators and computers could play in drill and practice? Two, what would happen if you let the kids choose the methods by which they could drill and practice? Give it some thought!

NOTES: ¹For additional information on thinking strategies for basic facts, see "Basic Fact Thinking Strategies for Multiplication – Revisited," by Cathy J. Cook and John A. Dossey in the *Journal for Research in Mathematics Education*, May 1982, pp. 163 – 171.

²Many resources exist for activities. For example, the publications of the National Council of Teachers of Mathematics. Also, commercial publications such as *Math Activities for Child Involvement* (3rd Edition), by C. W. Schwinkle and Enoch Dumas, Allyn and Bacon, 1981.

(CONTINUED FROM PAGE 5)

- to design evaluation forms based on a conference evaluation design approved by the Steering Committee
- to organize the appropriate distribution and collection of evaluation forms at the conference
- to prepare appropriate evaluation summaries according to the evaluation design
- to provide a written report to the Steering Committee following the conference

OPERATIONAL PROCEDURES

FINANCES: Finances for the conference shall be furnished from proceeds of conference registrations, fee payments, and exhibitor fees. The conference shall be non-profit and shall maintain a tax-exempt status. All proceeds from the conference shall be deposited in the CAMT Account with the following exceptions: monies collected by the Texas Council of Teachers of Mathematics for the sale of NCTM materials? monies collected by NCTM affiliated groups in Texas for the sale of materials approved by the Steering Committee.

EXHIBITS: Exhibits shall be allowed at the Conference, but they shall be limited to textbooks, supplementary materials, and materials to support the teaching of mathematics. No materials shall be sold on site by profit-making organizations.

COURTESY DISPLAYS/MEMBERSHIPS: Non-profit organizations whose main purpose is the improvement of mathematics/computer science education may request approval of the Steering Committee to display materials and/or solicit memberships in a separate designated area on a space-available basis.

CAMT ACCOUNT: The CAMT Account shall be permanently located in Austin and used only for CAMT-related expenses. The Treasurer shall be the person designated to draw on this account. The Conference Coordinator's name shall also be on the signature card in case of an emergency.

BUDGET/EXPENSES: The Steering Committee shall annually determine the amount of money to be allocated to the Program Chairperson for speakers' expenses. The Conference Coordinator shall approve all Operational Committee expenses and advances.

COMPLIMENTARY ROOMS: Complimentary rooms shall be made available (two to a room) to all Operational Committee Chairpersons, Conference Officers, and the Steering Committee.

Invitation to Mathematics 1-8

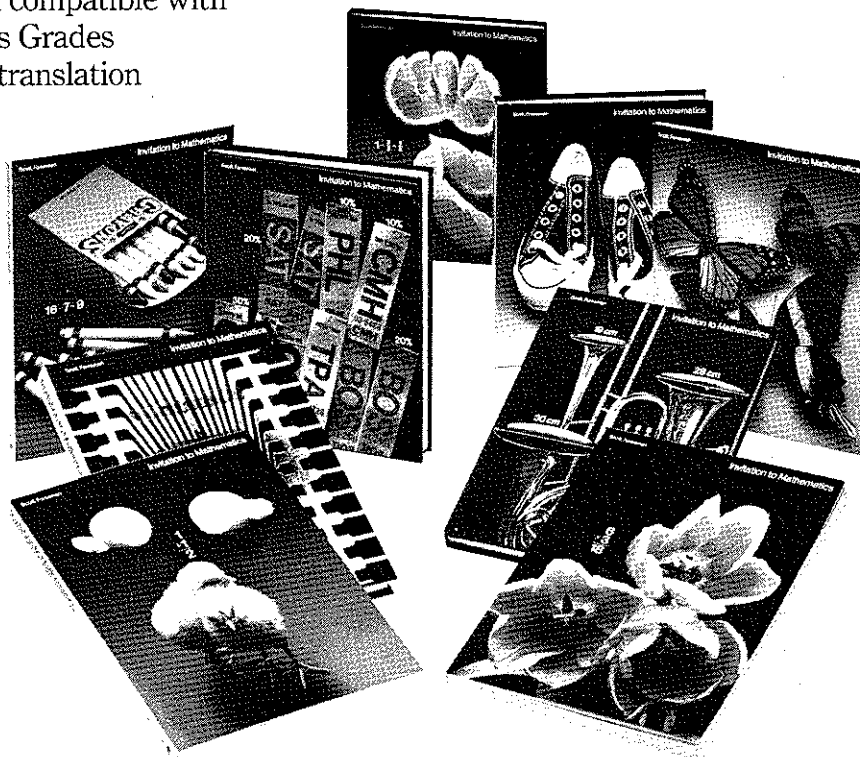
makes teaching math
a pleasure

Motivating lessons, colorful posters, an emphasis on problem solving, PLUS thorough coverage of the math content you need to teach—Invitation to Mathematics is the program you want in your classroom. And there are hundreds of ready-made worksheets, activities, and management aids to make your job easier.

A Spanish edition, *Invitación a las matemáticas*, Grades 1-5, is also available. These texts are completely classroom compatible with Invitation to Mathematics Grades 1-5—each text is a direct translation of the English version.

Invitation to
Mathematics
It works.

To serve you:
Joan Bobnick, Anastacio
Bueno, Raul Castilla, Paul
Colgin, Carol Dana,
Andrew Keim, Jay Lackey,
Sue May, Dick Rea, Arlene
Scheer, Lesa Scott,
Al Walker, Sue Wagley



11310 Gemini Lane
Dallas, Texas 75229
(214) 241-8630



a tradition to trust

Scott, Foresman and Company

PROBLEMS AND CONTESTS

Readers are invited to participate actively in this new section of this journal. Each of the issues will present problems submitted by teachers and students. Problems need not be original but the source if known should be given. Material from popular textbooks would not be appropriate.

Future issues will include the solutions to problems as submitted. Short articles on contests and problems are also encouraged. Contributions for the next issue must be sent by Nov. 15 to Diane McGowan, Route 1 Box 259, Cedar Creek, TX 78612.

Contributions should include the name, address, school and for students, the grade and age of the contributor. Certificates will be presented to students for their contributions of problems and solutions.

PROBLEM 1: From Dr. H. Don Allen, *The Mathematical Log*, *The Martian Fragment Number Challenge*.

The fragment illustrated derives from an early, little known exploration of the Red Planet. Martians go about addition, subtraction, multiplication, division, and exponentiation exactly as we do. They even use identical symbols for these operations. They use base ten and use the same digits we do but with a difference. Each symbol has a unique value but that value differs from what it would be on Earth. Decipher the fragment and answer the last equation.

$$\begin{aligned}8 \times 7 &= 8 \\4 \times 9 &= 39 \\51 - 2 &= 2 \\7^4 &= 6 \\3 + (4 \times 5) &= 34 \\40 + 04 &= \end{aligned}$$



PROBLEM 2: From the *New York State Mathematics Teachers Journal*.

A man had an 8 gallon keg of wine and a jug. One day he drew off a jugful of wine and filled up the keg with water. Later on, when the wine and water had been thoroughly mixed, he drew off another jugful, and again filled up the keg with water. The keg then contained equal quantities of wine and water. What was the capacity of the jug?

PROBLEM 3: From Dr. Carol McGill, *West Orange High School*, *Finding the Odd Ball*.

You possess a balance scale capable of showing only equal or unequal weights. You also have 12 balls. Eleven of the balls have exactly the same weight. The twelfth ball has a different weight, and you do not know if it is heavier or lighter. Using only three weightings you wish to locate the "odd ball" and to determine its weight relative to the others (heavier or lighter).

To stimulate an interest in mathematics and problem solving a teacher may involve students in some mathematical competitions. Contests may involve only your students, the school, the district or larger regions. In your classroom place a folder with bonus problems with bonus points being divided among those who solve the problems.

Anderson High School, Austin, mathematics teachers sponsored a monthly puzzle contest with prizes donated by local merchants. In future issues we will discuss other ways to stimulate interest in mathematics. Your contributions will be welcome.

E. GLENADINE GIBB

On June 29, 1984, Dr. E. Glenadine Gibb died from complications of cancer at Seton Hospital in Austin, Texas. The scope and depth of Dr. Gibb's contributions to the improvement of mathematics education were international and fundamental.

She had authored or coauthored more than one hundred publications including a landmark research study, many influential policy papers, and a major textbook series. She had taught in two secondary schools and eleven universities. She had delivered invited lectures in six foreign countries. She had edited *The Arithmetic Teacher* and served the National Council of Teachers of Mathematics as Vice President and as President.

Dr. Gibb was a major contributor to the development of Texas' Conference for the Advancement of Mathematics Teaching. She held the first endowed professorship in Education conferred at The University of Texas at Austin, where she was also tenured in the Department of Mathematics.

Dr. Gibb's death is a profound loss to the mathematics education community in Texas which she had served so long and well. It is an even more profound loss to those of us who knew and loved her as a friend.

merrill



Merrill brings its best to Texas... Programming in **BASIC**

Merrill's **PROGRAMMING IN BASIC** offers students meaningful exercises, problems with real-life applications, and hands-on laboratory activities.

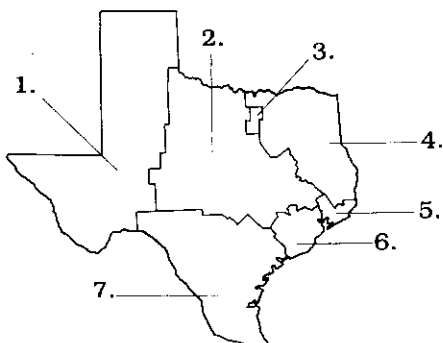
For teachers, we give you everything you need so even those with no programming background can be effective in the classroom.

In addition to the Student Text, there's a Teacher's Guide and Solutions Manual

with lesson notes, objectives, solutions to problems, and more; and a new Micro-computer Supplement that includes over 500 complete programs for the exercises and lab activities.

PROGRAMMING IN BASIC has been adopted for use in Texas schools.

For additional information contact your Merrill representative at the address below.



1. Charles J. Selva
2. Paula Casillas
3. Aubrey Bain
4. Ralph Carrington
5. Donald W. McGehee
6. Fred H. Ellis, Jr.
7. Jose Contreras

Rex Coppedge
Regional Manager
Charles E. Merrill
Publishing Co.
9259 King Arthur Drive
Dallas, TX 75247
(214) 638-3818

MERRILL

CHARLES E. MERRILL PUBLISHING CO.
A BELL & HOWELL DIVISION

STUFF

Dear T.C.T.M. Members,

Welcome to "Stuff." This is a new article for the Texas Mathematics Teacher. The objective of this section will be to provide interesting activities for classroom use. We would like, in the future, to feature ideas from T.C.T.M. members. So here is an opportunity to see your name and ideas in print. Send your games, puzzles, teaching tips and classroom gimmicks to Judy Tate, Harris County Department of Education, 6208 Irvington, Houston, TX 77022.

Sincerely,

"Stuff" Editorial Staff

A DOG GONE MESS

1. There are five runs, each inhabited by a different breed of dog.
 2. Each run has the dog's registered name on the door of the run.
 3. Each dog has a different color bowl with his nickname on the bowl.
 4. Each dog is a different color.
 5. The Great Dane's nickname is Blueboy.
 6. The dog whose nickname is Doc has a purple bowl.
 7. The registered name of the Chihuahua is Clover Prince.
 8. The Irish Setter has an orange bowl.
 9. The dog whose nickname is Pal is kept in the middle run.
 10. The fawn colored dog has a brown bowl.
 11. The grey dog's registered name is Windsong.
 12. The orange bowl belongs to the dog in the run to the right (your right) of the run where the dog with the red bowl is kept.
 13. The rust colored dog's nickname is Chief.
 14. The fawn is kept in a run beside the run which is to the left of the run where Doubledogdare is kept.
 15. The white dog is kept in the run next to the dog with the registered name of Masked Man.
 16. The Poodle is kept in the first run on the left.
 17. Masked Man and Clover Prince are next door neighbors.
 18. There are three runs between Doc and the rust dog.
 19. The Poodle is next to the dog with the blue bowl.
 20. The Pekingese is black.
 21. Trainer Bronsen's son feeds dog cookies to the rust colored Irish Setter on the end.
 22. The first run is occupied by a dog that is neither black or grey.
 23. The dog that has the red bowl is not black.
- Which dog has the nickname of Sam and which dog has the registered name of Bank Account.

ANSWER

You will find Sam, the black Pekingese in the second run eating from his blue bowl. His registered name is Masked Man. Mr. Bronsen's son knows that the white Poodle's registered name is Bank Account.

A PUZZLING CIRCLE

Can your students discover a strategy for solving the following puzzle (from Project-a-Puzzle, National Council of Teachers of Mathematics) in an efficient, logical manner? No one answer is correct, although some are more elegant than others.

Draw the diagram on the board. Ask your students to arrange the digits 1 thru 11 in the circles so that the sum of every three circles connected by a straight line equals 18.

Walk your students through one possible strategy by probing them with the following questions: What kind of strategy might help here? Which is the most important position? Why is the center the most important position? What kind of number should we put there? A large one? Why not? A small one? Why not? What do you notice about the number arrangements after you put the number 6 in the center? (SEE PAGE 11)

MOZO

Objective - to reinforce addition facts.

Procedure - Make several sets of cards containing one each of the numerals 1 through 9. Deal all cards face down to the players. They should take turns showing one card at a time. All exposed cards remain face up on the table. When the sum of any exposed cards is 10, the first student to say "MOZO" may collect all exposed cards. When all cards have been turned up, the player with the most cards wins.

GEOMETRY RIDDLES

1. What do we call a triangle who is never wrong?
2. What do people say about the mathematics student who always tries to flatter her teacher?
3. What do we call the amount of food Earl Campbell eats at training camp?
4. What is a large rainbow called? What is a small rainbow called?
5. What do we call poetry written by the "Birdman of Alcatraz?"

Answers: right angle; "she's always looking for complimentary angles;" proportion; major arc and minor arc; converse.

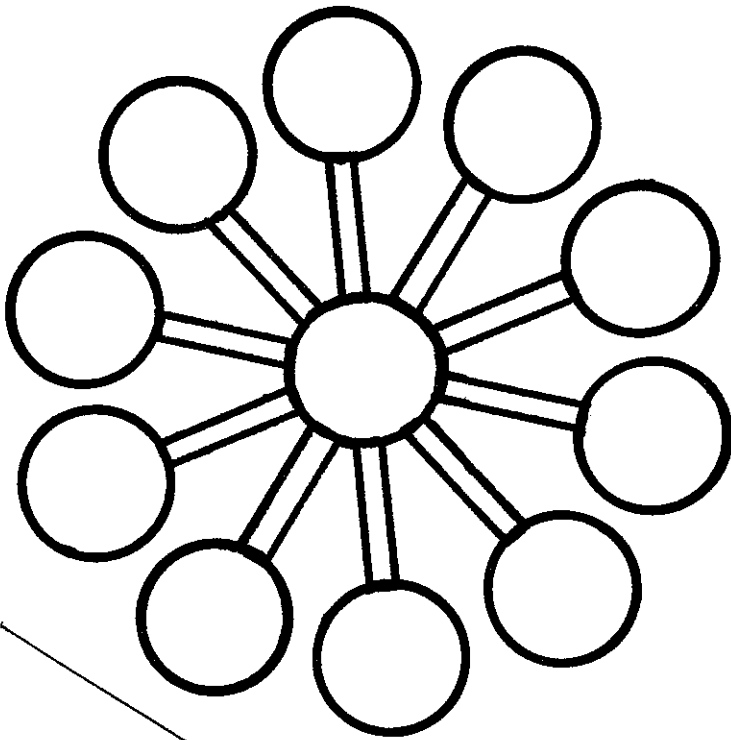
WANDA WITCH'S NUMBERS

Mental arithmetic should not be a bore. Use this witch and students will ask for more.

Can your students use Wanda's picture to answer these questions and then create their own math problems?

1. What is the total represented by Wanda?
2. What is noise + eye?
3. What is the total of the hair?
4. What is ear x chin?
5. What is the total of the hat; times the noise; minus the ear?

(SEE PAGE 11)



It's all around us!



National Metric Week

7-13 October 1984

National Council of Teachers of Mathematics

Contact NCTM #10, 1906 Association Drive, Reston, VA 22091 for a free THINK METRIC mini-poster and a list of community metric awareness activities.

MANUSCRIPTS NEEDED!!!!!! Send them to
100 S. Glasgow, Dallas, Texas, 75214.

NCTM ANNUAL MEETING COMING TO SAN ANTONIO

With the current availability of computers and calculators in the mathematics classrooms around the country, what curriculum alternatives should be developed? Such is the focus of the National Council of Teachers of Mathematics' 63rd Annual Meeting, scheduled for the San Antonio Convention Center next April 17-20, 1985.

"Exploring Curriculum Alternatives" is the official theme of the meeting, the first national convention to be held in the Alamo City. According to Local Arrangements Chairman Paul Foerster, mathematics educators are becoming increasingly aware of needed changes due to the impact of technology on the curriculum. Thus, the annual meeting will provide participants the opportunity of attending many provocative and informative sessions.

"Present plans," Foerster adds, "call for 513 sectional meetings, workshops, general sessions, and short topics. About 6000 mathematics teachers from the United States and Canada are expected to attend."



AN ALTERNATE METHOD FOR DIVIDING A SEGMENT INTO N EQUAL PARTS

Mark Klespis

The University of Texas at Austin

While most high school students enjoy compass and straight-edge constructions, the current method of dividing a line segment into n congruent parts seems tedious, especially if one wants to obtain more than three congruent parts. The standard construction (see for example, Foster, Cummins and Yunker, 1984, p. 454) involves drawing an arbitrary ray from one endpoint of the given segment, marking off n congruent segments on that ray and constructing parallel lines from the endpoints of these segments so that they intersect with the original segment. The problem here is that it requires the construction of n congruent angles on the ray, which can be time-consuming and frustrating for students whose compasses are not of the highest quality. The following is intended as a simpler and faster alternative. It uses the idea of alternate interior angles of parallel lines being equal and the idea that to divide a line segment into n equal parts, we need to make $n-1$ cuts. We consider the case for $n = 3$.

points where these two segments intersect \overline{AB} .

6) Then $\overline{AP} = \overline{PQ} = \overline{QB}$.

PROOF:

Make the following additional constructions:

a) \overline{YR} on \overline{AM} so that $\overline{YR} = \overline{AX}$; \overline{WS} on \overline{BN} so that $\overline{WS} = \overline{BZ}$.

b) Draw \overline{AS} , \overline{BR} .

c) Draw \overline{SX} . Then $\angle XSW = \angle XSA$ by SAS. Thus, $\overline{SA} = \overline{XW}$ and \overline{SAXW} is a parallelogram with $\overline{SA} \parallel \overline{XW}$.

d) Using a similar argument, \overline{WXYZ} and \overline{ZYRB} are also parallelograms and we have $\overline{SA} \parallel \overline{XW} \parallel \overline{YX} \parallel \overline{RB}$. Since these parallel lines cut off equal segments on \overline{AM} and \overline{BN} , they also cut off equal segments on \overline{AB} .

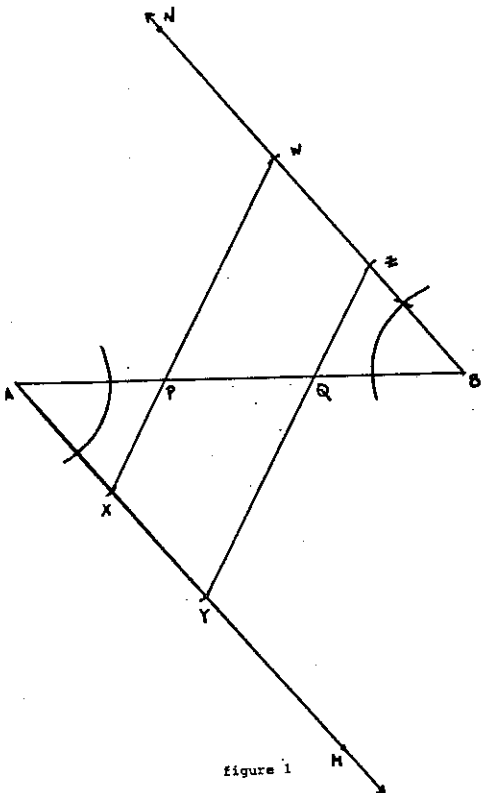


figure 1

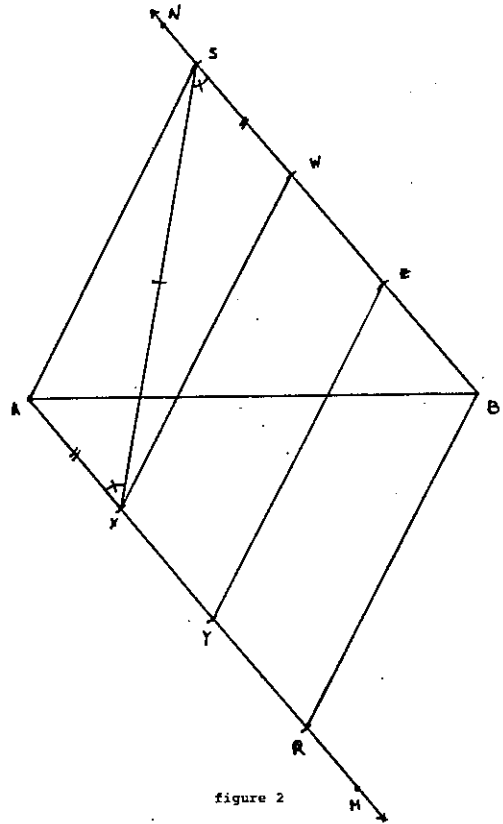


figure 2

GIVEN: \overline{AB}

CONSTRUCT: P and Q on \overline{AB} so that $\overline{AP} = \overline{PQ} = \overline{QB}$.

METHOD:

- 1) Draw \overline{AM}
- 2) Draw \overline{BN} parallel to \overline{AM} so that $\angle MAB$ and $\angle ABN$ form alternate interior angles with \overline{AB} as the transversal.
- 3) With the compass at point A, mark off X and Y on \overline{AM} so that $\overline{AX} = \overline{XY}$.
- 4) With the compass at point B, mark off Z and W on \overline{BN} so that $\overline{BZ} = \overline{ZW}$.
- 5) Draw \overline{XW} and \overline{YZ} and label as P and Q respectively, the

Note, for $n = 3$, we marked of $n-1 = 2$ equal segments on the two rays. This is because we are locating the places we wish to cut \overline{AB} . The main advantage of this method is that only two angles need to be constructed, regardless of the number of equal segments we are constructing on \overline{AB} . This procedure generalizes for any given n .

REFERENCES

Foster, A.G., Cummins, J.J. & Yunker, L.E. (1984). Geometry. Columbus, OH: Merrill Publishing Co.

**PLAN NOW TO ATTEND
THE
31st ANNUAL**

**CAMT
CAMT**

CONFERENCE FOR THE ADVANCEMENT OF MATHEMATICS TEACHING

SPONSORED BY

Texas Council of Teachers of Mathematics • Texas Education Agency • Texas Association of Supervisors of Mathematics
Mathematics Education Center, The University of Texas at Austin • Mathematics Department, The University of Texas at Austin

“MATHEMATICS – LOOKING AHEAD”

October 11-13, 1984

Palmer Auditorium – Hyatt Regency Hotel

Austin, Texas

Presentations • Demonstrations • Activity Sessions

Workshops • Exhibits

by

Teachers • Supervisors

Nationally Known Mathematics Educators

for

Teachers of Mathematics

Kindergarten — College

PLEASE SOLICIT NEW MEMBERSHIPS!

PROFESSIONAL MEMBERSHIP APPLICATION

Date: _____ School: _____ School Address: _____

Position: teacher, department head, supervisor, student,* other (specify) _____

Level: elementary, junior high school, high school, junior college, college, other (specify) _____

Other information _____

		Amount Paid
Texas Council of Teachers of Mathematics <input type="checkbox"/> New membership <input type="checkbox"/> Renewal membership		5.00
Local ORGANIZATION: <input type="checkbox"/> New membership <input type="checkbox"/> Renewal membership		
OTHER: <input type="checkbox"/> New membership <input type="checkbox"/> Renewal membership		
Name (Please print) _____ Telephone _____		↓
Street Address _____		
City _____ State _____ ZIP Code _____		
Check one: <input type="checkbox"/> New membership <input type="checkbox"/> Renewal membership		
National Council of Teachers of Mathematics	\$35.00 dues and one journal <input type="checkbox"/> Arithmetic Teacher or <input type="checkbox"/> Mathematics Teacher	
	\$48.00 dues and both journals	
	\$15.00 student dues and one journal* <input type="checkbox"/> Arithmetic Teacher or <input type="checkbox"/> Mathematics Teacher	
	\$20.00 student dues and both journals*	Note New Membership and Subscription Fees
	12.00 additional for subscription to <i>Journal for Research in Mathematics Education</i> (NCTM members only)	
The membership dues payment includes \$10.00 for a subscription to either the <i>Mathematics Teacher</i> or the <i>Arithmetic Teacher</i> and 75¢ for a subscription to the <i>Newsletter</i> . Life membership and institutional subscription information available on request from the Reston office.		
*I certify that I have never taught professionally _____		Enclose One Check for Total Amount Due →
(Student Signature)		

TEXAS MATHEMATICS TEACHER
 J. William Brown, Editor
 Texas Council of
 Teachers Of Mathematics
 Woodrow Wilson High School
 100 S. Glasgow Drive
 DALLAS, TEXAS 75214

Fill out, and mail to Mrs. Bettye Hall, 3830 Richmond, Houston, Texas 77027

NOW!

DIANE MCGOWAN 11 84
 RT 1 BOX 259
 CEDAR CREEK, TX 78612

NON-PROFIT
 ORGANIZATION
 U. S. Postage
 Paid
 Dallas, Texas
 Permit #4899