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IN THIS ISSUE

Letter from the President

Hi, everyone!

"The only true job of a teacher is to figure out what a child understands . . ." This is a quote from Candy Dawson Boyd from a conference I recently attended – she is a truly amazing woman who touches your soul through her knowledge, experiences, and laughter. It connects well, in my opinion, to the *Principles and Standards of School Mathematics* that NCTM releases in April in which such a vivid picture is painted of the many forms understanding of mathematics can take. A clear vision of the difficulties facing classroom teachers unfolds as we examine the document in great detail. Take the opportunity to explore *PSSM;* get involved in a study group. It can challenge each of us.

As a teacher, it has been my great pleasure to serve as President of the Texas Council of Teachers of Mathematics for the past two years. I have grown professionally and personally by working more closely with the membership in many, many ways. Working with CAMT and its many volunteers, developing relationships with TCTM's Executive Board, and communicating frequently with so many of you have all enlightened my experience. I look forward to those opportunities continuing when Judy Bishop and I serve as Program Co-Chairs for CAMT 2001 in San Antonio.

As for CAMT this year in Houston, included in this journal are:

- Your invitation to share a couple of hours with TCTM in the Registration booth, NCTM Materials booth, the CAMT 2001 booth, or our new TCTM booth with it's striking new banner. Please volunteer!
- Detailed information about our fun breakfast and business meeting with its great door prizes.
- Vitae to examine regarding the excellent candidates for TCTM office, so send in that ballot!

Again, thanks for the opportunity to work with you as President of TCTM! I look forward to extending the many friendships developed here to the other paths we all travel. Have a great close of school, and I'll see you in Houston!

Sincerely,

Pam

Pam Alexander

Pam Alexander has served as President of TCTM since CAMT 1998. She will end her term this CAMT when Kathy Mittag becomes the new TCTM President. The Board would like to thank Pam for all the hard work she has done as our President.

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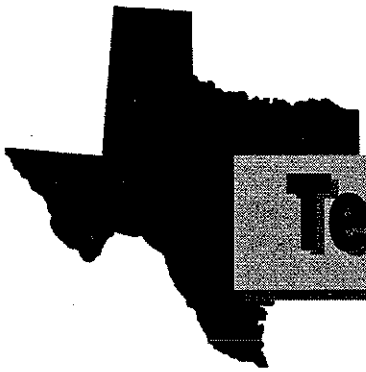

Texas Mathematics Teacher

LONE STAR NEWS

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Texas Mathematics Teacher, the official journal of the Texas Council of Teachers of Mathematics, is published in the fall and spring. Editorial correspondence and manuscripts should be mailed or e-mailed to the assistant editor.

All readers are encouraged to contribute articles and opinions for any section of the journal.

Manuscripts, including tables and figures, should be typed in Microsoft Word or Works. Submit four copies and an IBM formatted 3 1/2 inch diskette containing the manuscript or send as an e-mail attachment to assistant editor.

Articles for *Voices From the Classroom* should be relatively short. A discussion of appropriate grade level and prerequisites for the lesson should be included.

Items for *Lone Star News* include, but are not limited to, TCTM affiliated group announcements, advertisements of upcoming professional meetings, and member updates

Businesses interested in placing an **advertisement** for mathematics materials should contact Paul Kennedy.

Calculators and Efficiency

Francis J. Gardella, Associate Professor of Mathematics Education,
Hunter College-CUNY, New York, NY

The word "efficiency" is keynote in the use of the calculator or any computation process. There are situations when mental math is much more efficient than using a calculator. Likewise, there are situations when the calculator is much more efficient than mental math. There are times when mental math requires paper and pencil to keep track of the mental work as it proceeds. However, the major question that is consistently raised is "When are the times when one computational device is to be used instead of another?"

Below is an "Efficiency Test for Computing." The focus is efficiency. After you and others take it, you may be ready to discuss the place of calculators in mathematics classes.

EFFICIENCY TEST FOR COMPUTING

For each item, state if the use a calculator (c), paper and pencil (p), or mental math (m) to find the answer would be the most efficient method of computing.

1. $8 + 7$ 2. $27 + 35$ 3. $7{,}584 \div 54$

4. $4 \times 6\frac{1}{2}$ 5. 27×35 6. 0.86×0.032

Item one is a basic fact. Many times, critics of the NCTM Standards and any modernization of the mathematics program will state that, according to these new ideas, children do not have to know their facts. No major documents calling for reform in mathematics over the past twenty years suggests students not knowing basic facts to the recall level.

However, when should children know their facts? Many curricula and textbook programs suggest a sequence. For example, by the end of first grade, many curricula state that children should know the addition facts for sums to 10, with facts to 18 following by the end of second grade.

Multiplication is the main focus of third grade. The problem is that, although the study of multiplication facts must be completed by the end of March or April due to standardized testing, the development does not begin until January. Therefore, initial contact with these most important facts, ones that have and will continue to discourage students, is done within such a short time period that any child who may have a difficulty will be left behind quite quickly.

Charles and Lobato (1998) suggest the following:

Grade 1	Addition/subtraction facts through sums of 6
Grade 2	Addition/subtraction facts through sum of 12
Grade 3	Addition/subtraction facts through sums of 18
	Multiplication facts through 5 x 9
Grade 4	Multiplication facts through 9 x 9

Other items on the test focus on the discussion of which algorithms students should know. The goal that students will know algorithms involving multi-digit numbers (items 3 and 5) creates problems in the upper elementary grades. It is evident that children should know certain algorithms. However, the more specific debate centers around the question, "Which algorithms should students know?"

Charles and Lobato (1998) continued their work to this question and listed algorithms for whole numbers with recommendations for movement by grade level. In their work, we see a listing of the "de-emphasis/omission" of those skills that, in light of the calculator, need not be pursued. As a rationale, they state, "These algorithms were developed at a time when

calculators did not exist and thus, algorithm mastery was essential to become mathematically literate."

The present writing goes a step further and specifically lists those algorithms for whole numbers that add little to the mathematical competence of the student while adding a great deal to the view that mathematics is a rigid, rule-controlled undertaking.

Without further discussion, the recommendations will be offered. It is hoped that this sequence of paper and pencil algorithmic skills, together with the use of mental math and the calculator, will bring rationality and efficiency to number work in the schools as these options have done in the work place.

Operation	**Algorithms to learn:** To be completed by mental math or paper and pencil	**Algorithms not to be learned:** To be completed with calculator
Addition	Two 2-digit numbers Three 3-digit numbers	Multi-digit numbers beyond 3 digits
Subtraction	(Same as addition)	
Multiplication	Two 2 digit numbers	More than two 2-digit numbers with the exception of multiples of 100, 1000, etc.
Division	One-digit divisor with 2- and 3-digit dividend	Any divisors of more than 1 digit with the exception of multiples of 10. Dividends of more than 3-digits

Again here, as in viewing the facts, grade levels for mastery of these algorithms needs to be discussed. Charles and Lobato give recommendations for this.

The present placement of these skills in the curriculum, in a manner somewhat parallel to the grade-level view of basic facts, consistently leaves students behind. A longer time span for acquiring certain skills combined with the omission of others could give many more students the accomplishment of mastery.

Summary

The key work in the use of calculators in school, as in work or life, is efficiency, Knowledge of basic facts is one requirement for making mathematics efficient. However, we must rethink when these facts are to be mastered. The idea of efficiency also plays a role in dealing with algorithms. The outline above delineates which algorithms known by students opens the avenue to allow these students to explore applications of large numbers without the interference of long and cumbersome algorithmic procedures. It is so in the reality of life and the workplace. Let it be so in the reality of the classroom.

Reference

Charles, Randall and Joanne Lobato. (1998) Future Basics: Developing Numerical Power. Monograph of the National Council of Supervisors of Mathematics.

Mathematics, STS, and Culture: Real World Problem Solving

Dr. Shirley Gholston Key, Assistant Professor,
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Mathematics is a natural aspect of students' lives. Many students, on a daily basis, routinely use math to converse with peers and to evaluate natural phenomenon. Students learn to use mathematics in many diverse ways, but they do not recognize this as the same mathematics that is taught to them in school because of the non-integration and non-relevancy of many mathematics classes. Marilyn Burns (1992) discusses the mismatch between school arithmetic and real-life arithmetic, indicating that real life situations usually involve contextual problem solving. The mathematics that students use and learn in school is separated from problem situations. Students are not asked how to solve and to do calculations but are told to perform algorithms using pencil and paper procedures. They find this mathematics very different from the mathematics that they use when they are trying to buy a toy, books, and candy at the store while calculating how much money to keep for their lunch for the remainder of the week.

"Knowing mathematics means being able to use it in purposeful ways. To learn mathematics, students must be engaged in exploring, conjecturing, and thinking rather than only in rote learning of rules and procedures. Mathematics learning is not a spectator sport. When students construct personal knowledge derived from meaningful experiences, they are much more likely to retain and use what they have learned. This fact underlies teachers' new role in providing experiences that help students make sense of mathematics, to view and use it as a tool for reasoning and problem solving" (Curriculum and Evaluation Standards for School Mathematics: Executive Summary as cited in Burns, 1992, p 3).

One way to make mathematics engaging and relevant is to involve students in problem solving. The National Council of Teachers of Mathematics (NCTM) defines problem solving as an integral part of the national standards. Problem solving is seen as the central focus of the mathematics curriculum and the primary goal of mathematics instruction (NCTM, 1989).

Science -Technology-Society (STS)

Many classrooms have not made the important link of making problem solving relevant and real to many students. They are taught problem solving strategies in a mathematical context, but teachers do not make relevant links to social and cultural issues nor activities outside of the mathematics classroom. Social and cultural issues are mechanisms for transferring mathematics outside of the classrooms. STS (Science-Technology-Society) maybe referred to as a strategy, program, or curriculum that allows teachers and students to make this relevant connection outside of the mathematics classroom. STS had its beginning in the science disciplines but has always integrated mathematics. It is a nontraditional curriculum, in that, STS uses issue evaluation and allows students opportunities to study current, relevant topics of their interest. This curriculum allows students to develop a more positive attitude about learning, which increases their retention of knowledge (Hungerford, Volk, & Ramsey, 1988; Ramsey, 1989; Yager, 1991). As students use relevant science knowledge, they must use relevant mathematics knowledge to solve and explain the solutions to their problems. (See Table.)

In addition, many educators believe that nontraditional curricula (STS, individualized instruction, etc.) are more appropriate for culturally diverse students (Bennett, 1989). Some psychologists and educators (Bennett, 1989; Cummins, 1986; Ogbu, 1990) believe that the reason culturally diverse students are not successful is because of a lack of cultural inclusion in classes and lessons. One remedy proposed by educators such as Wiesenmayer (1988) and Waks (1989) is the STS curriculum, which allows for cultural inclusion and cultural relevancy in lessons. This practice of cultural inclusion could develop better attitudes in

culturally diverse students and increase their interests and thus their achievement in science and mathematics.

Cultural Understanding

STS enhances cultural understanding by including culture. Cultural inclusion is the integration of the learner's culture into the academic and social context of the schooling in such a way that it aids and supports academic learning. Cultural identity is valued, while promoting personal, human, and social development. Cultural inclusion is needed to develop competent and socially responsible participants of a culturally diverse society where group identity is valued and preserved. It stresses changing schools to make them culturally consistent, relevant, and meaningful to diverse populations. It helps to eliminate bias, create a new standard of measure, and provide equitable curriculum and pedagogical practices (Hollins & Spencer, 1990, as cited in Key, 1995).

Addressing science and mathematics learning in relation to cultural diversity in the classroom is a challenge to traditional ways of teaching. Real-life teaching experiences will provide data about cultural diversity, which can be used to create learning environments that are built on community cultures. (See Table.) Children can learn mathematics and science through real-life stories and journeys that are grounded in their cultural and social contexts.

Cultural understanding begins with a cultural frame of reference. Students of color, students from diverse cultures, urban students, and suburban students all have different cultural frames of reference. When studying issues as in The Table, students bring their cultural frame of reference or cultural understanding to the classroom to share with their peers. STS enhances this understanding by allowing the natural integration of differences and cultures into the curriculum as students actively solve relevant issues.

Issues

STS encompasses major themes as in the integration with social studies. Those themes are: critical public issues that affect the well being of individuals and societies, processes and skills in thinking about critical public issues associated with science and technology, the utility of trade-offs in decision making on STS issues, knowledge and skills in civic actions, and interrelationships and integration of knowledge and cognitive process skills from several academic disciplines. All of these themes involve mathematical problem solving and can address the differences in cultures.

Using an interdisciplinary theme allows one to teach mathematical ideas as well as other subject areas. This is considered a whole-concept approach to teaching, which has greater authenticity than compartmentalizing study by subject areas. By choosing themes or issues to explore real-life experiences and center on student interests, teachers encourage problem solving, group cooperation, and individual enthusiasms (Troutman & Lichtenberg, 1995). Real learning takes place when children are mentally and emotionally engaged and can best be done when students are motivated to answer questions that come from their interactions with issues that are significant to them. There are many issues and topics that crowd the real world that students can investigate, but investigating issues relevant to their community, daily life, and culture are more relevant and powerful. STS and environmental education are excellent contexts in which to incorporate stories about real life. Foster (1999) cited three issues students could use to enhance their math utility and skills:

1. What can be done to prevent abandoned city buildings and vacant lots from becoming contaminated with toxins and other pollutants?
2. What can be done to minimize the amount of throwaway items that create litter and huge garbage dumps?
3. What can be done to minimize the pollution of lakes, rivers, and streams in urban and rural areas? (Foster, p.48)

Incorporating STS or issues into the classroom can take three different emphases: Emphasis 1: Begin with hands-on activities that are knowledge oriented; Emphasis 2: Choose a technology, and Emphasis 3: Begin with identifying a social issue created by technology (Foster, 1999).

The three issues above were taught using Emphasis 3, which begins with a social issue, in an urban and suburban middle school by the author. Portions of the integration of cultural understanding and mathematics are shown in the Table.

Conclusion

Culturally, the students defend their positions on all the issues from various perspectives, and they bring many culturally diverse personalities into the classroom when discussing city council persons and community leaders. They integrate many mathematical skills when researching data to present to authorities to request services and to defend their positions on the issues. The students integrate many more mathematical skills and procedures when presenting their data to their peers. These activities and relationships established during the study of these issues continue long after the class session has ended.

STS allows students to become involved in activities that will be remembered and leave them with the understanding that mathematics is useful and worth learning. STS is also a curriculum model that allows mathematics teachers the opportunity to use social issues to improve students' mathematical, social, and cultural understanding. It gives everyone a natural method of addressing cultural diversity in the mathematics classroom.

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Picture it...Your name in print.

You could be in the next *Texas Mathematics Teacher*. Submit your ideas.

Possibilities include:

- short lessons
- games or puzzles
- project ideas
- interesting problems
- ideas for integrating literature, technology, or data collection
- researched articles

Table

Issues	Cultural & Relevancy	Mathematics
1. What can be done to prevent abandoned city buildings and vacant lots from becoming contaminated with toxins and other pollutants?	1. How many abandoned buildings and vacant lots are in your community? 2. How many owners of the building live within your community? 3. Who is the city council person that could support you in locating the owners of vacant buildings and require them to prevent the collection of toxins and other pollutants on their property?	1. How many vacant lots and abandoned buildings are in your community? *(frequency figure, bar graph)* 2. What percentage of your community consists of abandoned buildings and vacant lots? *(frequency figure, bar graph, percentages)* 3. How many residents in your community are concerned about the vacant lots and abandoned buildings? *(community survey, frequency figure, bar graph)* 4. How many possible toxins and pollutants could contaminate vacant lots and abandoned buildings? *(frequency figure)* 5. What is the probability of pollutants affecting the community? *(probability, statistics, percentages, ratios)*
2. What can be done to minimize the amount of throwaway items that create litter and huge garbage dumps?	1. What type of throwaway items do you and your family accumulate in one week? 2. How much plastic, glass, and paper does your family throw away in one week? 3. How much plastic, glass, and paper does your family recycle in one week? 4. What type of throwaway items do you and your classmates accumulate in one week? 5. How much plastic, paper, and glass do you and your classmates recycle in one week?	1. What percentages of your weekly household garbage are glass, plastic, and paper? *(frequency figure, bar graph, percentages)* 2. What percentage of your weekly household garbage is recycled? *(frequency figure, bar graph, percentages)* 3. What percentages of your weekly classroom's garbage are glass, plastic, and paper? *(frequency figure, bar graph, percentages)* 4. What percentage of your weekly classroom's garbage is recycled? *(frequency, bar graph, percentages)* 5. How many of your classmates refuse plastic bags and styrofoam cups? *(frequency figure, bar graph)* 6. What percentages of your classmates reuse the same lunch and grocery bags? *(frequency figure, bar graph, percentages)*
3. What can be done to minimize the pollution of lakes, rivers, and streams in both urban and rural areas?	1. What types of pollutants do you see in the lake, river, stream, bayou, or drainage ditch near your home? 2. How many neighbors reported that they throw items into the lake, river, stream, bayou, or drainage ditch near your home? 3. Who is the civic club officer or city council person that could enable you to establish a "no dumping zone or sign"?	1. How much of each pollutant did you see in the lake, river, stream, bayou, or drainage ditch near your home? (make a frequency table) 2. What percentage of the students in your class is willing to volunteer to become a member of your community green peace patrol? (conduct a survey, calculate percentages, make a graph) 3. What percentage of your community's residents is willing to volunteer to become a member of your community green peace patrol? (conduct a survey, calculate percentages, make a graph)

Using Rent-to-Own to Explore Bloom's Taxonomy

Dana L. Crow, Tarleton State University
Dr. Charles E. Mitchell, Tarleton State University

The *Curriculum and Evaluation Standards for School Mathematics* (National Council of Teachers of Mathematics, 1989) represents the need for instructional and curricular change in a wide variety of ways. For the most part, however, the changes recommended do not involve learning new practices or eliminating old ones, but changes in the way components of the curriculum are emphasized. Repeatedly mentioned in the areas to receive increased emphasis are open-ended problems and, whenever possible, the contexts should involve real-life situations to better motivate students. Repeatedly mentioned in the areas to receive decreased emphasis are the memorization of rules and formulas and rote or routine practice assignments. The development of higher-order thinking and reasoning skills is a desirable objective at all educational levels but often a difficult one to address. Although Bloom's Taxonomy of Educational Objectives in the Cognitive Domain (Bloom, 1956) is dated by many standards, it still represents an excellent tool not only in identifying higher-order thinking skills but also in helping educators develop activities and problems in which students would demonstrate their abilities to think and reason. Finding open-ended problems can also pose problems for educators, but the contexts of our daily lives can often be a fertile resource for good problems. The purpose of this manuscript is to describe a class project involving decisions facing consumers in the rent-to-own context and to identify some of the higher-order thinking and reasoning skills that might be addressed in the development of the project.

The Project

The project begins with the identification of items available on a rent-to-own basis that can also be purchased either in the community or through a catalog. Table 1 includes the data on three items identified by the students.

TABLE 1
Rent-to Own Vs. Store Purchase Data On Three Products

Product	Store A	Store B	Rent-to-Own
5 CD Rack System	$599.99	$499.99	$14.99*
Big Screen TV	$1699.00	$1395.00	$31.99**
Washer	$399.00	$324.99	$21.99*

* Per week / Two Year Plan

** Per week / Three Year Plan

That differences in retail prices, and even major ones, may exist between two stores in the same community may be the first discovery. At times the repair services offered in support of the product may vary; then, consumers will be called upon to evaluate the service and reputation of a business in relationship to the initial difference in prices. The students may begin to see that the mathematical differences encountered in a decision may be only the starting point in arriving at a decision.

Investigating the rent-to-own option lends itself to the use of a calculator in many ways. To begin with, the students will need to calculate the total price of the items under investigation. In the example from Table 1 the CD System will cost $1558.96, the TV will cost $4990.44, and the washer will cost $2286.96. In the rent-to-own option, the CD System may end up costing $1000 more than the current retail price, the TV could cost almost $3600 more than it sells for

retail, and the consumer could ultimately pay nearly $2000 more than retail for the washer.

Thus far in the project, the students will have been presented with a real-life context in which they have the opportunity to comprehend the nature of the many mathematical computations they are deriving. In this level of Bloom's Taxonomy, the students will have the opportunity to translate and interpret the mathematical computations into verbal statements and conclusions. Upon seeing the consistent patterns in the data the students will have the opportunity to extrapolate beyond the data. They can draw conclusions about the real cost of products available through rent-to-own but not investigated in the project.

Interesting to note is the more products students choose to investigate, the more repetitious the calculations and computations. Yet, the students are making the computations for a meaningful reason and not just to practice the skills that they have acquired.

Additional Options

Consumers are not limited to the two options above in making purchase decisions, and it may be interesting to make some other comparisons. For example, a consumer may have the option of borrowing $1400 from a lending institution to buy the television. With an interest rate of 10%, the consumer would owe $45.17 a month for three years. This would result in a total cost of $1626.12. Calculated on a weekly basis, to facilitate comparisons with the rent-to-own option, the payment would be $10.42. If a loan is possible, the savings would be over $21 per week compared to rent-to-own.

Another interesting option is for the consumer to save the money until the TV could be purchased outright. Assuming the consumer saved $32 per week (the weekly cost of the rent-to-own plan) the consumer would need to save approximately 44 weeks or ten months. The money saved would easily amount to over $3000, but the consumer would have to wait the ten months. Of interest to note is that the wait time could be shortened if more than $32 is saved each week.

At this stage in the project, the students would be thoroughly involved in opportunities to develop reasoning skills in the analysis, synthesis, and evaluation levels of Bloom's Taxonomy, the highest levels. The question of how important it is to have the television today is one most consumers frequently face. This question fits in the evaluation level, the highest level in the Taxonomy. For the teacher, it is an opportunity to involve all students meaningfully in the lesson, regardless of the level of their mathematical sophistication.

Conclusion

The rent-to-own options available to consumers offer interesting applications of mathematics and opportunities to develop higher level reasoning skills identified in Bloom's Taxonomy. Additionally, the contexts of daily life offer a wonderful opportunity to explore mathematics in relevant, meaningful ways and provide a rich source of open-ended problems for students to explore.

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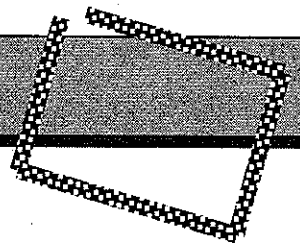
Pipe Cleaners



Pamela Weber Harris, Southwest Texas State University
Dr. Paul Kennedy, Texas Christian University

"Pipe Cleaners" is taken from the TexTEAMS Rethinking Middle School Mathematics: Algebraic Reasoning Institute. See the brochure about TEXTEAMS after this article.

Institute Notes

Concept: Gather data to determine the relationships between the base and height of rectangles with a fixed perimeter and express the relationship using words and symbols.

Overview: Participants will physically build rectangles with pipe cleaners. Since the pipe cleaners are all the same length, the rectangles will all have the same perimeter. Participants will investigate the relationship between the base and height of each of these rectangles. Connecting multiple representations, they will collect data in a table, graph the data, and build a symbolic rule relating base and height for rectangles of a given perimeter.

TEKS Focus: **6.4-The** student uses letters as variables in math expressions to describe how one quantity changes when a related quantity changes.
7.4-The student represents a relationship in numerical, geometric, verbal, and symbolic form.
8.4-The student makes connections among various representations of a numerical relationship.

Materials: Pipe cleaners (light colored, one per participant), Markers, 1" grid paper, Peel-and-stick dots

Procedure:

1. Give each participant a pipe cleaner and ask each participant to measure the length of the pipe cleaner to the nearest half-centimeter. Have the participants in each group agree on a length and write it on the transparency of Activity 1, Exercise 1a.

Also:
Grade 6
4A, 4B, 5,8A, 8D, 1OD, 11C, 12A, 13A
Grade 7
2B, 4A, 4B, 5, 8, 9, 13C, 13D, 14A, 15A
Grade 8
2A, 2B, 2C, 4, 5, 14C, 15A, 16A
Algebra I
b.1A, 1B, 1C, 1E, b.2C, b.2D, b.3A, 3B, b.4A, 4B, c.2F, d.

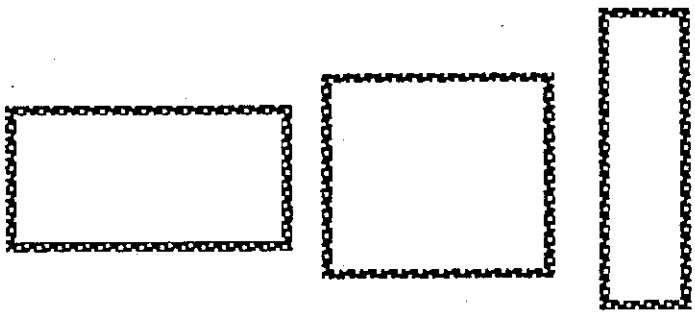
2. Instruct each participant to fashion a rectangle from a pipe cleaner so that the ends of the pipe cleaner meet at a corner of the rectangle. They are to work alone.

Correct: Ends of pipe cleaner meet in upper left corner.

Incorrect: Ends of pipe cleaner meet on a side.

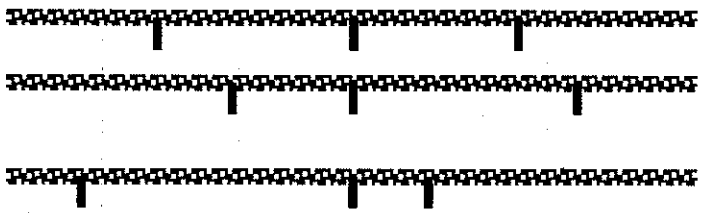
3. Have participants share their rectangle building strategies with the other members of their group. Then have a member of one group share one of the group's strategies with all of the participants. Have a representative from another group share a different strategy. Continue this until all different strategies used are mentioned. Possible strategies include:
   - Guess-and-check bending
   - Folding the pipe cleaner in half first and then folding the remaining halves.
   - Starting with an oval and forming a rectangle by pinching the oval.

4. Ask participants to compare rectangles in their groups and change them, if necessary, so that all the rectangles in the group are different from one another, i.e. short and wide, long and skinny, square.



Math Notes:
The idea is that you can use the semi-perimeter fold as a starting point. This is important for generalizing a symbolic rule later.

5. Instruct participants to mark the corners of their rectangles with a marker or piece of tape. Then they should straighten the pipe cleaner. Ask them to line up the pipe cleaners in their group next to each other and compare them. Discuss their observations. Elicit the following two important points:
   - The pipe cleaners are all the same length.
   - The second marks are all in the same place, in the middle.



6. Have participants do Activity 1 by measuring the length of each piece of their rectangles to the nearest half-centimeter, filling in the table, and answering the questions.

7. Have participants do Activity 2 by graphing the data from the table in Activity 1 and answering the questions. Have each group make a group graph on 1 -inch .graph paper, display the graph on the wall, and compare their graph to the others.

Extensions: Build a table of heights, bases, and areas of the rectangles with fixed perimeter. Graph area vs. base and discuss the nonlinear plot. Which rectangle gives the most area? (Square)

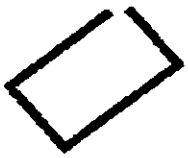
Assessment: Explain how you can move students from concrete experiences to algebra via language.

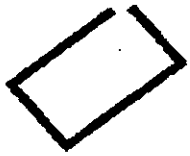
Notes:

Pipe Cleaners

Pipe Cleaners

Activity 1





1. Measure the length of each side of your rectangle to the nearest half-centimeter. Fill in the table with all the data from your group's rectangles.

Sample Data

Base	Height
6	4
5	5
3	7
8	2
4	6
1	9
B	H

a. What is the length of the pipe cleaner?

b. What does the length of the pipe cleaner represent In terms of a measure of a rectangle?

c. For each base and height find the sum. What do you notice?

d. Write a sentence and a rule to describe how the lengths of the base and height compare to the length of your pipe cleaner.

e. For a base equal to 2 cm and a pipe cleaner of length 30 cm, how could you determine the height?

f. If the height is 4.5 cm and the pipe cleaner is 30 cm long, what is the base? How do you know?

Reason and Communicate:
What strategies did you use to find the sentence and rule to describe how the lengths of the base and height relate to the length of the pipe cleaner?

Math Notes:
a. Encourage participants to do these problems numerically using mental math.

c,d. For a pipe cleaner of length 20 cm, the base plus the height is half the length of the pipe cleaner, or

$$\text{base+height} = \tfrac{1}{2}(20)$$
$$= 10$$

base + height = 10. Be sure to write the verbal sentence and then the rule
$B + H = 10$.

Answers:

a. Answers will vary depending on the pipe cleaners used.

b. The length of the pipe cleaner represents the perimeter of the rectangle.

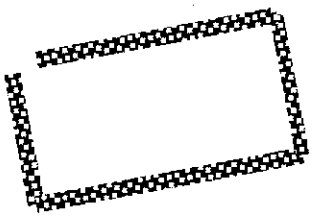
c. The base and height add to the same number each time, half the perimeter.

d. Suppose that the length of the pipe cleaner is 30 cm. Then the base plus the height is 1/2 the length of the pipe cleaner, 15 cm. $B + H = 15$.

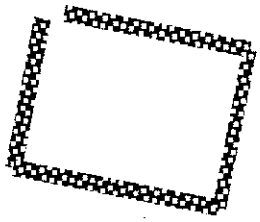
e. For a base of 2 cm and pipe cleaner of length 30 cm, the height is 13 cm.

f. For a height of 4.5 cm and pipe cleaner length of 30 cm, the base is 10.5 cm.

Pipe Cleaners



Activity 1



1. Measure the length of each side of your rectangle to the nearest half-centimeter. Fill in the table with all the data from your group's rectangles.

Base	Height
B	**H**

a. What is the length of the pipe cleaner?

b. What does the length of the pipe cleaner represent in terms of a measure of a rectangle?

c. For each base and height, find the sum. What do you notice?

d. Write a sentence and a rule to describe how the lengths of the base and height compare to the length of your pipe cleaner.

e. For a base equal to 2 cm and a pipe cleaner of length 30 cm, how could you determine the height?

f. If the height is 4.5 cm and the pipe cleaner is 30 cm long, what is the base? How do you know?

Pipe Cleaners

Activity 1, cont.

2. The data in the table below is from a different pipe cleaner. Complete the 'Height column.

Sample Data

Base	Process	Height
3	10 – 3 =	7
8	10 - 8 =	2
6	10 - 6 =	4
1	10 - 1 =	9
5	10 - 5 =	5
B	10 - B =	H

a. Explain how you found the missing heights.

b. Can you tell what the length of the pipe cleaner is? If so, how?

c. Use the length from Part (b) to develop the process column, showing how to find the height it you know the base.

d. Write a sentence to describe how to determine the height it you know the base.

e. Write a symbolic rule for your sentence.

Answers:

a. From Exercise 1, we know the base plus the height is one-half the length of the pipe cleaner. Add the first few base lengths to their corresponding height lengths. The number you get is half the length of the pipe cleaner. Use this to find the missing heights.

b. The length of the pipe cleaner is twice the sum of the base and height, so the length is 20 cm.

d. In this case, we know that half the perimeter is 10. Height is 10 minus the base.

e. $H = 10 - B$

Reason and Communicate:

- What are *B* and *H* called? *Variables.*

- If you have a pipe cleaner of length 30 cm, how can you describe the relationship among the base, height, and length of the pipe cleaner?
  The base plus the height is 15.
  Base plus height is 15.
  Base + Height = 15
  $B + H = 15$

We are "undoing" to develop:
  The height is 15 minus the base.
  Height is 15 minus Base
  Height = 15-Base
  $H = 15 - B$

- What are the big ideas we developed in this activity? *Moving from concrete experiences to more abstract representations in small increments with numerous experiences, writing equations from patterns via language, and the idea of* ***undoing*** *addition to write the relationships like* $H = 15–B$.

- What "habits of mind" did you encounter in this activity? Moving from **patterns to rules** and **doing and undoing.** These will ultimately lead to a third habit of mind, **abstracting from computation.** That is, understanding a + b = c implies a = c - b.

Math Notes:

c. Be sure to develop this carefully to make the generalization in Part (d).

d,e. It is important here to use the measure for the perimeter as a number. Thus, height is 10 – base or H = 10 - *B*. Do not bog down using the notation "0.5P" for the length of the pipe cleaner. We will develop this later. The idea is for participants to move from language to variables.

Pipe Cleaners

Activity 1, cont.

2. The data in the table below is from a different pipe cleaner. Complete the "Height" column.

Base	Process	Height
3		7
8		2
6		4
1		
5		
B		

a. Explain how you found the missing heights.

b. Can you tell what the length of the pipe cleaner is? If so, how?

c. Use the length from Part (b) to develop the process column, showing how to find the height if you know the base.

d. Write a sentence to describe how to determine the height if you know the base.

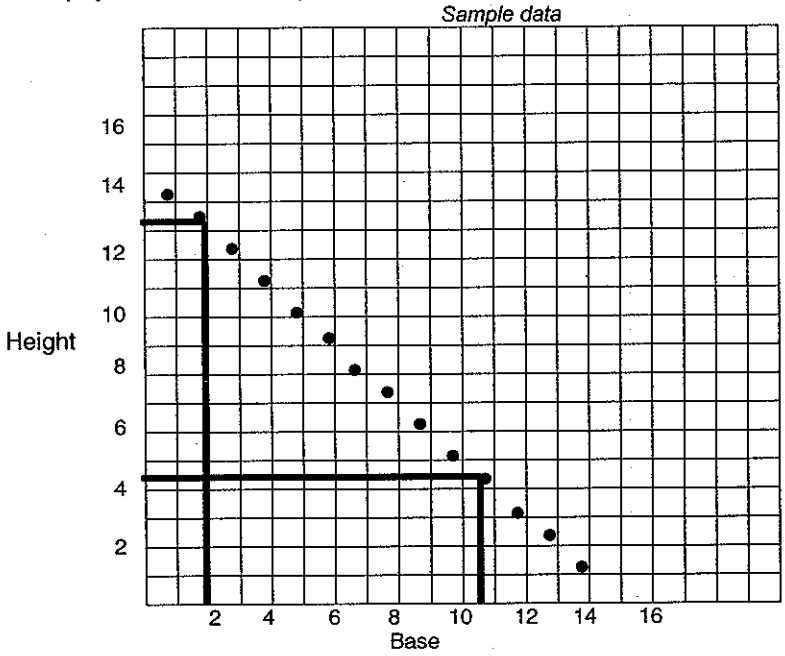
e. Write a symbolic rule for your sentence.

Pipe Cleaners

Activity 2

1. Graph your data from Activity 1, Exercise 1 on the grid below.

Sample data



a. Describe your graph.
b. What does the ordered pair (x. y) mean in this problem?
c. Use your graph to determine the height for a base of 2 cm.
d. Use your graph to determine the base for a height of 4.5 cm.
e. Label your graph with a rule.
f. Use the table and graph feature of your calculator to test the rule you conjectured.

2. Use your rule and the table feature of your calculator to answer these questions:
   a. For a base of length I .5 cm, what would be the height?
   b. For a height of length 7 cm, what would be the base?

3. Use the data in Activity 1, Exercise 2 to build a scatter plot on your graphing calculator. Then show that your rule fits the data by graphing both the scatter plot and the rule.

Answers:

1a. Answers may include: The line segment goes down from left to right.

b. (base, height)

c. In a rectangle with a perimeter of 30 cm and a base of length 2 cm, the height is 13 cm long. Using a vertical line at 2, read 13 on the y-axis.

d. In a rectangle with a perimeter of 30 cm and a height of length 4.5 cm, the base is 10.5 cm long. Using a horizontal line at 4.5, read 10.5 on the x-axis.

e. For a rectangle with a perimeter of 30 cm, the height is 15 minus the base:

H = *15* - B.

2a. In a rectangle with a perimeter of 30 cm and a base of length 1.5 cm, the height is 13.5 cm long. Enter 15 - x into the calculator and scroll down the table until 1.5 appears in the x-column. Read the corresponding output value of 13.5 in the y-column.

b. In a rectangle with a perimeter of 30 cm and a height of length 7 cm, the base is 8 cm long. Enter 15 - x into the calculator and scroll down the table until appears in the y-column. Read the corresponding input value of 8 in the x-column.

Reason and Communicate:

- How are the table, graph, and symbolic rule related?

- Why does the line slope down?

- In Activity 1, we chose the base as the input variable. Did we have to? Explain your reasoning. *The assignment of dependence is arbitrary in this case. We could easily have labeled the axes the other way.*

- What are reasonable values for the base? *Lengths of the base are restricted to lengths greater than 0 and less than one-half of the perimeter.*

- What do the x- and y-intercepts mean on this graph? *The pipe cleaner is folded in half with either a 0 base or 0 height, so these points do not represent rectangles.*

Math Notes:

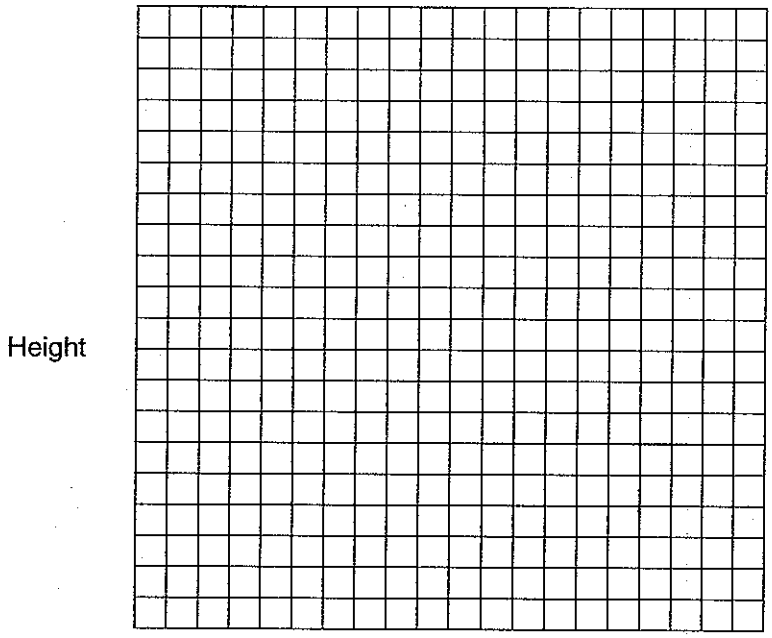
In this activity, we are beginning to build intuition for multiple representations.

When participants enter the data to build a scatter plat, you can use list operations and your rule to build the second list. This is another way to check your rule and to build intuition for the concept of variables.

Pipe Cleaners

Activity 2

1. Graph your data from Exercise 1, Activity 1 on the grid below.



   a. Describe your graph.

   b. What does the ordered pair (x, y) mean in this problem?

   c. Use your graph to determine the height for a base of 2 cm.

   d. Use your graph to determine the base for a height of 4.5 cm.

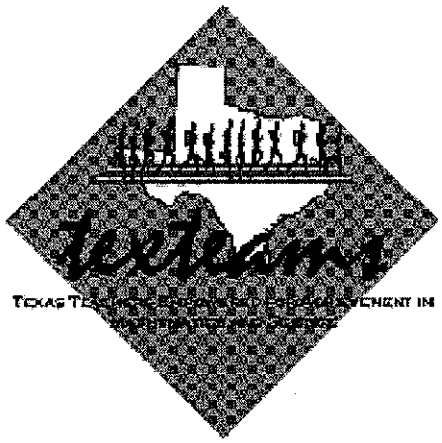
   e. Label your graph with a rule.

   f. Use the table and graph feature of your calculator to test the rule you conjectured.

2. Use your rule and the table feature of your calculator to answer the questions:
   a. For a base of length 1.5 cm, what would be the height?

   b. For a height of length 7 cm, what would be the base?

3. Use the data in Activity 1, Exercise 2 to build a scatter plot on your graphing calculator. Then show that your rule fits the data by graphing both the scatter plot and the rule.



TEXTEAMS

Professional Development Mathematics

What is TEXTEAMS?

TEXTEAMS is a comprehensive system of professional development based on the Mathematics and Science Texas Essential Knowledge and Skills designed to offer quality professional development through a well-trained network of leaders within a flexible structure. Every school or district, working with a TEXTEAMS Leader or Master Leader, can customize the program to meet its needs, including developing appropriate ongoing support and follow-up experiences.

Hours received in TEXTEAMS Institutes can be applied toward the required training for gifted and talented in the area of curriculum and instruction. Individual district/campus acceptance of these hours for gifted/talented certification is a local decision.

Contact Information

For more information on TEXTEAMS Professional Development and a list of training dates, please visit our website at

www.utdanacenter.org/ssi/projects/texteams

or contact:

Jackie Jimenez
Mathematics TEXTEAMS Coordinator
jjimenez@mail.utexas.edu
512-471-5223
Charles A. Dana Center
The University of Texas at Austin

Philosophy

- Teachers at all levels benefit from extending their own mathematical knowledge and understanding to include new content and new ways of conceptualizing the content they already possess.
- Professional development experiences, much like the school mathematics curriculum itself, should focus on few activities in great depth.
- Professional development experiences must provide opportunities for teachers to connect what they have learned to their day-to-day teaching.

Mathematics Institutes at CAMT 2000

All TEXTEAMS Mathematics Institutes will be offered at this year's CAMT (Conference for the Advancement of Mathematics Teaching) during July 25-29, 2000, in Houston. For information on registering, please contact the CAMT office at 512-335-2268 or adhcamt@flash.net.
Registration deadline is April 30, 2000.

For other information on CAMT, go to www.tenet.edu/camt/camt00/.

For more resources to help educators in implementing the TEKS, visit the Mathematics TEKS Toolkit at www.tenet.edu/teks/math.

Charles A. Dana Center
The University of Texas at Austin

High School Mathematics Institutes

Algebra I

This institute is divided into three sections that match the major divisions of the Algebra I Essential Knowledge and Skills: foundations for functions, linear functions, and quadratic and other nonlinear functions. The use of manipulatives and technology are employed to build concrete, numerical, pictorial, graphical, and algebraic representations of functions and equations.

High School Geometry

This institute develops a variety of topics in geometry of the plane and in space related to dimension, size, location, and shape, as well as geometry on various surfaces. One of the major themes is the use of a variety of approaches including algebraic methods, hands-on methods, and technology. Emphasis is placed both on cooperative learning requiring group activities and teacher led activities. Many of these are problem-driven lessons in a real-world context. The technology incorporated is designed in such a way that the lessons can be used by non-experts. The institute is designed to broaden and deepen the understanding of geometry for teachers and to present a variety of teaching methods for familiar material.

Geometry for All

This institute focuses on important geometric concepts: reasoning, geometric patterns and functions, dimension, location, size, and shape. Building upon the functional approach of the Algebra I Institute, the Geometry for All Institute serves as a bridge to the Geometry Institute. Activities engage students in developing geometric thinking using manipulatives, incorporating technology, and extending geometric concepts to real-world applications. User-friendly explorations with technology are designed for a variety of settings–from hand-held to desktop computer technology, from the one-computer classroom to a laboratory setting.

Mathematical Modeling Institute for Secondary Teachers

This institute will address two priorities: the incorporation of appropriate mathematical modeling in all high school mathematics courses and support for the new Mathematical Models with Applications course as defined in the TEKS.

Mathematical Models with Applications Course Materials: Science Component

This institute provides professional development for student and teacher materials created for the science component of Mathematical Models with Applications. Materials are available at the following web address:

www.tenet.edu/teks/math/

Algebra II/Precalculus

This institute is designed to extend the participant's understanding of the concepts developed in the Algebra II and Precalculus TEKS. During the institute, participants will engage in rich experiences that examine the power of a variety of functions as mathematical tools to model the world around us.

Middle School Institutes

Rethinking Middle School Mathematics: Proportionality Across the TEKS

The TEKS call for an increased emphasis on proportional relationships across middle school mathematics curriculum. This institute focuses on the development of the properties, language, and representations of proportional relationships that arise from number, operation, algebra, probability, statistics, measurement, and geometry.

Rethinking Middle School Mathematics: Algebraic Reasoning Across the TEKS

This institute highlights the algebraic "habits of mind" called for in the TEKS for middle school mathematics by building and making connections between concrete, verbal, numeric, graphic, and symbolic representations of relationships between quantities. The institute explores patterns and problems that lead to the development of algebraic thinking skills.

Elementary Institutes

Grade1–2

This institute promotes problem solving across the mathematics curriculum. Each of the five units focuses on a different strand: number sense, patterns and relations, geometry and measurement, probability and statistics, and operations and computation. In addition to the mathematics concepts presented, specific teaching strategies are addressed. With this dual approach, teachers will experience a constructivist approach to mathematics teaching while increasing their own repertoire of activities for presenting specific mathematics concepts to children.

Grade 3–5

This institute is designed around five concept areas: number concepts; mathematical relations, functions, and other algebraic concepts; geometric properties and relationships; measurement concepts; and probability and statistics. Problem solving and appropriate computational targets are interwoven throughout.

TEXTEAMS Institutes Under Development

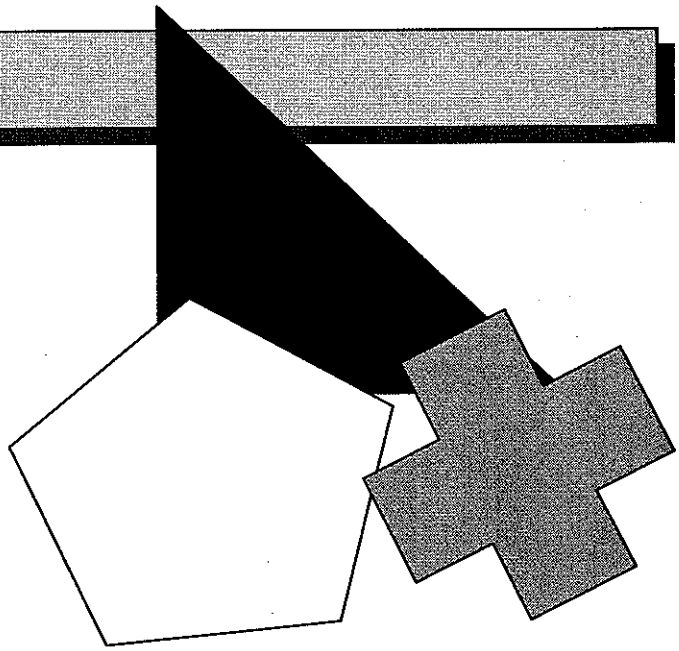
The following TEXTEAMS institutes are currently under development and will be released in 2000–2001:

- Rethinking Middle School Mathematics: Numerical Reasoning Across the TEKS
- Rethinking Secondary Mathematics: Statistics Across the TEKS
- In-depth Secondary Mathematics
- Mathematics Institute for Prekindergarten-Kindergarten Teachers

March 14, 2000

Puzzle Corner: Shape It Up

Michelle Youngs



The *Puzzle Corner* this month comes from the great American puzzle genius of a century ago, Sam Loyd, and was originally published with the name "The Royal Road to Mathematics." *Shape It Up*, as we have renamed it, is similar to tangrams, but uses only five pieces that are all different from each other, unlike the seven tangram pieces which include several duplicate shapes. In this activity, students are challenged to cut out the five shapes and use them to make eight geometric figures. (In order to help you conserve paper, each student will need only half of the first student page.) This activity is meant to be done in conjunction with *Sizing Shapes* [found in *AIMS*, February 2000], the *Maximizing Math* activity, in which students will examine the perimeters of the figures that they construct in *Shape It Up*. In fact, the original illustrations that went with Loyd's puzzle indicate that he was well aware of the mathematical properties of his puzzle, although he did not ask people to explore them.

This activity will challenge students' spatial visualization abilities as they learn to see how the five puzzle pieces can be put together to form each of the eight figures. Students can be told that puzzle pieces may be flipped over; however, there is at least one solution for each shape that does not require this. For older students there is also the potential to discuss geometry as they identify the characteristics of the figures they create. Once students have solved the eight figures given, they can be challenged to create their own figures and trade then with classmates to solve. In fact, if your students come up with any especially creative or unusual figures using the five puzzle pieces, send us copies of their work and we may print then in a future issue of *AIMS*.

Editor's Note:

The editors would like to thank *AIMS* for allowing us to reprint the *Shape It Up* from *AIMS* magazine (Activities Integrating Math and Science), February 2000.

AIMS Educational Foundation, a research and development organization, is "dedicated to the improvement of the teaching and learning of mathematics and science through a meaningful integrated approach." The *AIMS* magazine, published 10 times a year, is "designed to provide continuous staff development." In each *AIMS* magazine, you will find activities for primary, middle, and upper grade-levels.

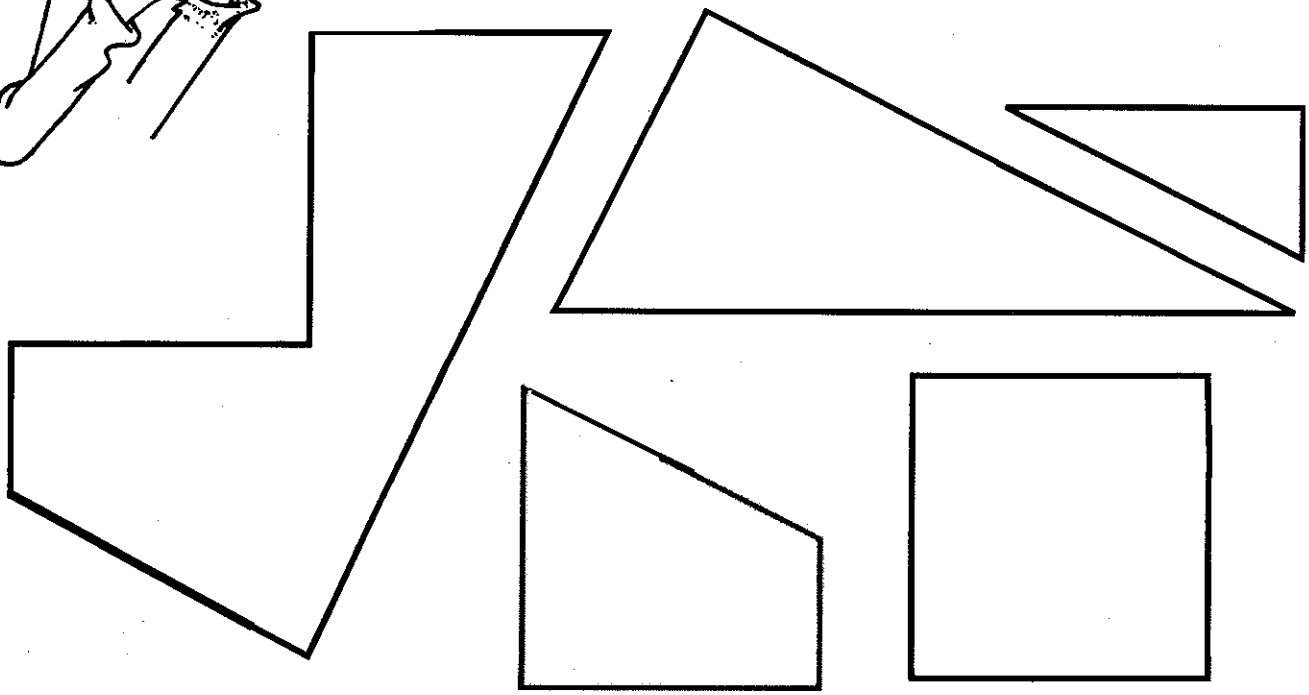
To subscribe send your name and mailing address to:

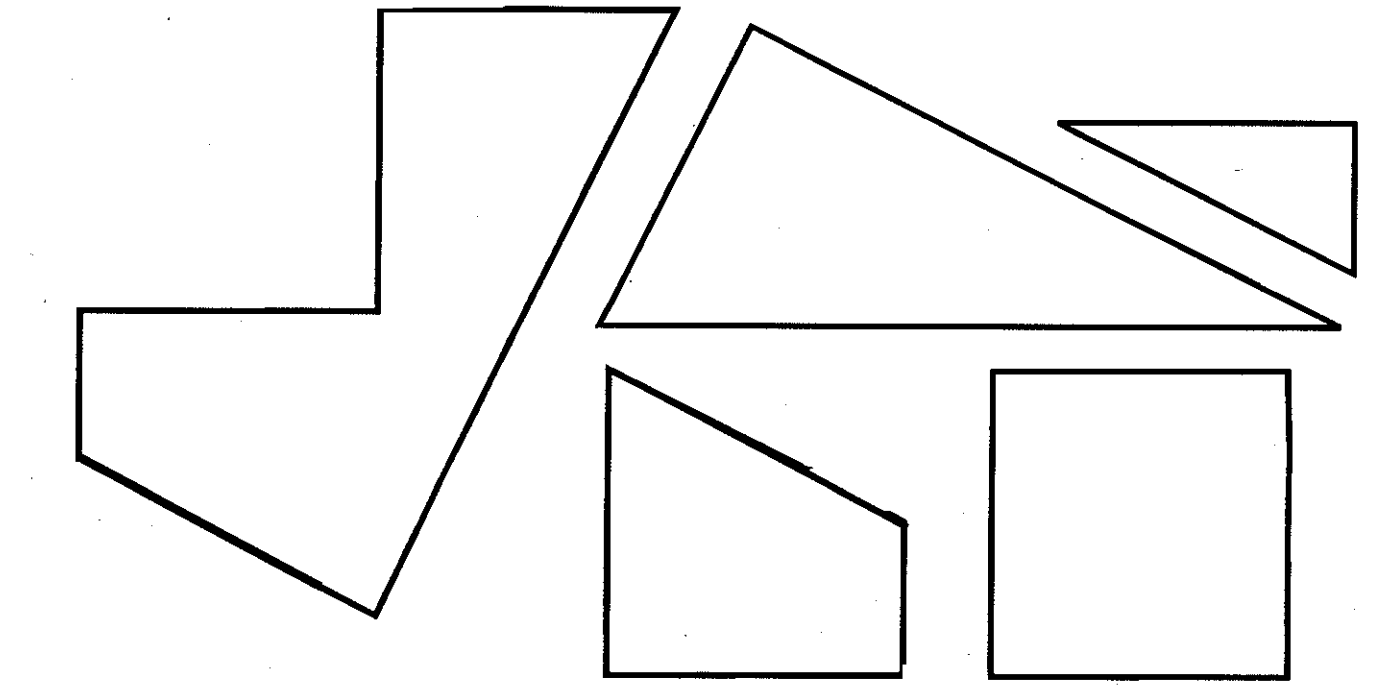
AIMS Education Foundation
PO Box 8120
Fresno, California 93747-8120

You may also call 1-888-733-2467. Subscriptions are $30 a year.

Shape It Up

Carefully cut out the five shapes below. Use them to make each of the figures on the next page.

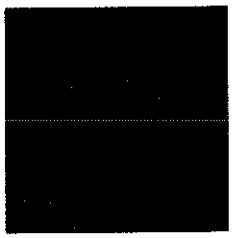




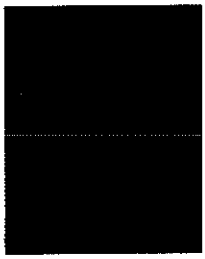
Shape It Up

Make each of the following figures with your five pieces. Each figure must use all five pieces. Make a record of each solution you discover in the space at the bottom of the page. Use the back of the paper if necessary. (Some figures may have more than one solution.)

Greek Cross

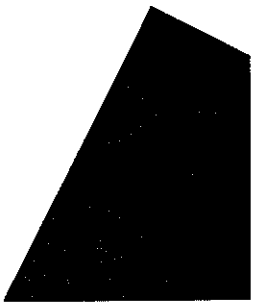


Square



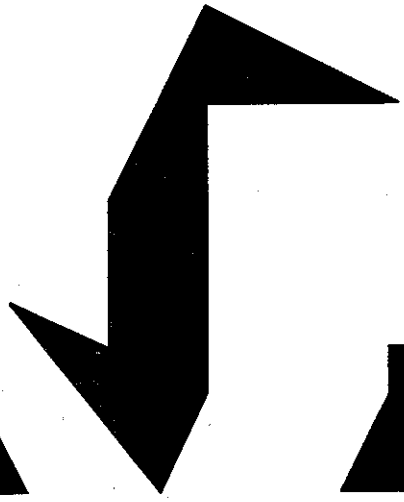
Rectangle

Parallelogram

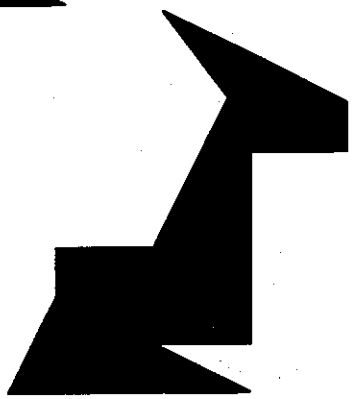


Quadrilateral

Right Triangle



Seahorse



Rabbit

Extra challenge: Create some more irregular shapes like the Seahorse and the rabbit. Make a picture of each, and trade them with your classmates to solve.

CAMT 2000

Mathematics for the Millennium:
A Commitment to Excellence
July 27 –29
George R. Brown Convention Center
Houston, Texas

Sponsors
Texas Council of Teachers of Mathematics
Texas Association of Supervisors of Mathematics
Texas Education Agency
Texas Section of the Mathematical Association of America

For more information about the Conference for the Advancement of Mathematics Teaching (CAMT), see the CAMT 2000 program your school should have received or go to the CAMT website in the Mathematics Toolkit: www.tenet.edu/camt/camt00/

If you have not been to CAMT you are missing out. It is one of the best opportunities to learn about teaching mathematics. Make plans to be in Houston this year. You will grow professional because of it.

TCTM is a co-sponsor of CAMT, and we are responsible for supplying the registration, NCTM sales, and the renewed TCTM booth with **volunteers**. Please take some time to lend a hand. It's a great opportunity to meet people and make professional contacts. The TCTM Member Participation Form is on the next page.

On Saturday morning, TCTM will be holding its annual **breakfast and business meeting**. This is your chance to take a part in TCTM business and possibly win some door prizes. Tickets must be reserved and are $10. Fill out the TCTM Member Participation Form on the next page to reserve your tickets.

Web Wonders

For the latest on CAMT, see www.tenet.edu/camt/camt00/

The Math TEKS Toolkit is just what the name implies, a site full of tools for implementing the TEKS. There's also lots of other math information and links to important sites: www.tenet.edu/teks/math/

Do you have a favorite site you'd like to see in "Web Wonders"? E-mail Michelle Morvant at mmorvant@personalcomputer.net. Include the site address and why it is such a good site.

Leadership Awards

For several years, TCTM has presented the TCTM Leadership Award and E. Glenadine Gibb Achievement Award to deserving people.

The TCTM Leadership is to honor a person for his/her contributions to the improvement of mathematics education at the local and state level. He or she has promoted the local TCTM Affiliated mathematics council and, thus, must be nominated by a TCTM Affiliated Group.

The E. Glenadine Gibb Achievement Award is given to honor someone for his/her contributions to the improvement of mathematics education at the state and/or national level. A TCTM member must nominate this person.

E. Glenadine Gibb Awardees

1995	Iris Carl
1996	Cathy Sealey
1997	Pam Chandler
1999	Eva Gates

TCTM Leadership Awardees

1995	Mary Alice Hatchett
1996	Betty Forte
1997	Diane McGowan
1999	Linda Shaub

TCTM MEMBER PARTICIPATION FORM FOR CAMT

All members of TCTM should take an active role to help make CAMT successful. Please examine the times and volunteer to serve. Circle the time slot(s) you can help. If you cannot help for the whole time period, please indicate when you can work in the margin.

CAMT REGISTRATION DESK
George R. Brown Convention Center, Third Floor Foyer
Houston, Texas

Wednesday, July 26	1:30-3:30 p.m.	3:30-5:00 p.m.		
Thursday, July 27	6:45-9:00 am	9:00-11:00 am	11:00 am-1:00 p.m.	1:00-3:00 p.m.
Friday, July 28	7:15-9:00 am	9:00-11:00 am	11:00 am-1:00 p.m.	1:00-3:00 p.m.
Saturday, July 29	7:15-9:30 am			

NCTM Materials Sales and TCTM Booth
George R. Brown Convention Center, Exhibit Hall D

Thursday, July 27	9:30-11:30 am	11:30 am–1:30 p.m.	1:30-3:30 p.m.	3:30-5:30 p.m.	5:30-6:30 p.m.
Friday, July 28	8:30-10:30 am	10:30 am-12:30 p.m.	12:30-2:30 p.m.	2:30-4:30 p.m.	4:30-6:30 p.m.
Saturday, July 29	8:00-10:00 am	10:00 am-12:30 p.m.			

TCTM Breakfast and Business Meeting
_____ Enclosed find my $10.00 check for the TCTM breakfast and business meeting reservation. The breakfast will begin at 7:00 AM, Saturday, July 29, in the Regency Room.
NOTE: Breakfast tickets must be reserved. There will not be tickets available at the conference.

Member Information

Name _____

Home Address _____ ESC region _____

City, Zip _____ Phone _____

E-mail Address _____ (Please include if possible.)

School, District, or Professional Affiliation _____

Fold this form in three, staple, and **send no later than June 1, 2000.**

Tickets to the breakfast and confirmation of your registration or NCTM materials booth assignment will be mailed to your home about July 15.

Place
stamp
here.

Pam Alexander
Rt. 4 Box 5212
Nacogdoches, TX 75964

TEXAS COUNCIL OF TEACHERS OF MATHEMATICS
MATHEMATICS SPECIALIST SCHOLARSHIP

Amount: $1000 or $500

Application Deadline: June 1, 2000

Eligibility: Any student who will graduate in 2000 from a Texas high school - public or private - and who plans to enroll in college in the fall of 2000 to pursue a career in mathematics teaching either as a mathematics specialist in elementary school or as a secondary school teacher with certification in mathematics.

Name: _____
Last First Middle

Address: _____
Number and street Apt. number

_____
City Zip code

Phone number: ( )_____ Birth date: _____

Social security number: _____

High school(s) attended: _____

What college or university do you plan to attend? If you are awarded this scholarship, TCTM's treasurer will send a check directly to the business office of the college. We need the college's complete address.

Enclose the completed application with each of the following in the same envelope and mail to Pam Alexander at the address listed below. **YOU MUST INCLUDE 3 COPIES OF ALL REQUIRED MATERIALS.**

1. On a separate sheet, list high school activities including any leadership positions.
2. Official high school transcript
3. Letter of recommendation from a TCTM member
4. An essay describing your early experiences learning mathematics and any experiences explaining mathematics to your classmates or friends. This essay must be no more than two pages, double-spaced.
5. An essay telling why you want to be a mathematics specialist in elementary school or a mathematics teacher in middle or high school. This essay must be no more than one page, double-spaced.

Return all materials in one envelope to: **Pam Alexander**
Rt. 4 Box 5212
Nacogdoches, TX 75964

E. Glenadine Gibb Achievement Award Application

The E. Glenadine Gibb Achievement Award is presented to someone nominated by a TCTM member to be honored for his/her contribution to the improvement of mathematics education at the state and/or national level. **Deadline: June 1, 2000**

Information about the TCTM member nominating a candidate:

Name: _____

Home address: _____

Home phone: _____ Business phone: _____ E-mail: _____

Are you a member of TCTM? _____ NCTM? _____

Information about the nominee:

Name: _____

Home address: _____

Home phone: _____ Business phone: _____ E-mail: _____

Is the nominee a member of TCTM? _____ NCTM? _____ Retired _____

Applications should include 3 pages:

- Completed application form
- One-page, one-sided, typed biographical sheet including:
  - Name of nominee
  - Professional activities
  - National offices or committees
  - State TCTM offices held
  - Local TCTM-Affiliated Group offices held
  - Staff Development
  - Honors/awards
- One-page, one-sided essay indicating why the nominee should be honored for his/her contribution to the improvement of mathematics education at the state/national level

Send the completed application, biographical sketch, and essay to:

Pam Alexander
Rt. 4 Box 5212
Nacogdoches, TX 75964

TCTM Leadership Award Application

The TCTM Leadership Award is presented to a TCTM member who is nominated by a TCTM Affiliated Group. This person is to be honored for his/her contributions to the improvement of mathematics education at the local and state level. He/she has designed innovative staff development and has promoted the local TCTM Affiliated mathematics council. **Deadline: June 1, 2000**

Information about the of Affiliated group nominating a candidate:

Name of Affiliated Group: _____

President of the Affiliated Group: _____

Home address: _____

Home phone: _____ Business phone: _____ E-mail: _____

Are you a member of TCTM? _____ NCTM? _____

Information about the person being nominated:

Name: _____

Home address: _____

Home phone: _____ Business phone: _____ E-mail: _____

Is the nominee a member of TCTM? _____ NCTM _____ Retired _____

Applications should include 3 pages:

- Completed application form
- One-page, one-sided, typed biographical sheet including:
  - Name of nominee
  - Professional activities
  - State/local offices or committees
  - Activities encouraging involvement/improvement of math education
  - Staff Development
  - Honors/awards
- One-page, one-sided essay indicating why the nominee should be honored for his/her contribution to the improvement of mathematics education at the state/national level.

Send the completed application, biographical sketch, and essay to

Pam Alexander
Rt. 4 Box 5212
Nacogdoches, TX 75964

TEA Update

Barbara Montalto, TEA Consultant

Teacher Educator Committees met January through March to discuss and recommend which student expectations should be tested on the new statewide assessment. Senate Bill 103 says,

(a) The agency shall adopt or develop appropriate criterion-referenced assessment instruments designed to assess essential knowledge and skills in reading, writing, mathematics, social studies, and science. All students, except students assessed under Subsection (b) or (1) or exempted under Section 39.027, shall be assessed in:

(1) Mathematics, annually in grades three through seven without the aid of technology and in grades eight through 11 with the aid of technology on any assessment instruments that include algebra;

(c) and the agency shall also adopt secondary exit-level assessment instruments designed to be administered to students in grade 11 to assess essential knowledge and skills in mathematics, English language arts, social studies, and science. The mathematics section must include at least Algebra I, and geometry with the aid of technology.

The first draft of the 11th grade exit level test objectives and student expectations should be on the assessment web site in early April: www.tea.state.tx.us./student.assessment. A survey will be available for your response. You may either respond on-line or download the form and submit a hard copy with additional comments. Survey forms will also be mailed to all Grade 8, Algebra I, and Geometry teachers.

Addendum to the Educators Guides to TAAS–based assessment are on the web site and were mailed to all school districts in March for elementary and middle school. Exit Level addendums were mailed in January.

Project Steam III

Red River CTM, in conjunction with **Texarkana College** and **Texas A & M – Texarkana**, will be hosting a one-day mathematics conference for educators, ***Project STEAM III*** (Successfully Training Educators As Mathematicians), on Friday, October 20, 2000. The original Project STEAM was held in 1994 and again in 1997 and was attended by 500-700 participants (K-16) each time it was hosted. The conference provides an opportunity for participants to choose sessions and/or workshops from 50 – 60 speakers; browse exhibits of the latest offerings from publishing companies, vendors of teaching/learning materials, and poster sessions; and network among colleagues. Continuing a tradition of excellence in mathematics professional development, RRCTM is seeking exemplary volunteer speakers to add to our program. Consider sharing your wealth of knowledge and experience in teaching mathematics with other K-16 educators by presenting at STEAM III. Complete and return the speaker proposal form on the next page today! (Deadline: May 1, 2000)

If you would like further information regarding speaking, exhibiting (as a vendor or poster presenter), or participating in our conference, please contact:

Jamie Ashby
Texarkana College
2500 North Robison Road
Texarkana, TX 75599
(903) 838-4541, X319 or 311
email: jashby@tc.cc.tx.us

Project STEAM III
Successfully Training Educators As Mathematicians
Speaker Proposal Form

Conference Date: Friday, October 20, 2000

The Red River Council of Teachers of Mathematics invites you to submit a proposal for a presentation at STEAM III, a one-day conference held on the campuses of Texas A & M at Texarkana and Texarkana College. *Proposal deadline is May 1, 2000.* Mail or fax the completed form to:
Bruce Gearing, Texas High School, 2112 Kennedy Lane, Texarkana, Texas 75503; fax: (903) 792-8971.

(Please complete a separate form for each proposed presentation.)

Name: _____

Address: _____

City/State/Zip: _____

Telephone: (h)_____ (w)_____

School Affiliation: _____

Fax: _____

E-mail: _____

Level of Responsibilities:
___ K - 4
____ 5 - 8
____ 9 - 12
____ Post Secondary
____ Administrator
____ Commercial Rep.
____ Other

Title of Proposed Presentation: _____

Co-presenter: _____

Specify two recent speaking experiences:

_____

_____

Type of Presentation: _____Session (1 hour)
_____Workshop (2 hours)

Are you willing to repeat the presentation? _____

Maximum number of participants: _____ 30 _____ 50 _____ 75 _____ 100+

Equipment needed for presentation: _____

_____

_____

Proposed audience:
Circle levels that apply: K 1 2 3 4 5 6 7 8 9 10 11 12 College General Interest

How does this presentation relate to the NCTM standards? _____

_____

_____

Description of proposed presentation: (please limit to boxed space)
Please give short professional biography for our program: (No more than three or four sentences)

Looking Ahead

Austin Area Council of Teachers of Mathematics (A^2CTM)

Making Every Minute Count Conference

Featuring

"Stirring Up Some New Ideas in Mathematics"

October 21, 2000 (Saturday) Austin, Texas

You are invited to submit a speaker proposal to the program committee by May 1, 2000.
Please send information to: Mary Alice Hatchett, Director of Mathematics
Round Rock ISD
1311 Round Rock Ave.
Round Rock, Texas 78681
mary_hatchett@roundrockisd.org
PHONE: 512-464-5075 FAX: 512-464-5090

Information: (please print or type)

Name: _____

Address: _____

City/State/Zip: _____

Home Phone: ( ) _____

Campus/District: _____

Work Phone: ( ) _____

E-mail: _____

Indicate the audience range your presentation will cover:

	PreK		1		3		5		7		9		11
	K		2		4		6		8		10		12

Title (not more than 110 characters):

Abstract of proposed presentation (not more than 50 words):

You Can Make A Difference in Mathematics Education

TCTM is an affiliated group of the National Council of Teachers of Mathematics (NCTM). As a member of TCTM, you can help drive the direction and focus of NCTM.

In 1999, TCTM helped pass the following resolution at the Delegate Assembly in San Francisco:

RESOLUTION M.NR.2.99

> *Be it resolved that NCTM and its Affiliates use their influence to advocate and encourage state and local educational agencies to provide and require appropriate ongoing professional development in mathematics content and mathematics pedagogy in accordance with NCTM Standards for all elementary, middle, and secondary teachers of mathematics.*

As a result of this resolution, NCTM has begun work to publish materials for staff development.

If you are concerned about an issue, please send it to your NCTM representative. It will be written as a resolution and sent to the Southern Regional Caucus and Delegate Assembly held during the NCTM Annual Conference. If your resolution passes, then the NCTM Board of Directors will use it to determine their focus for the coming year. As a member of TCTM, this is your platform.

Please send your ideas to your NCTM Representative:

Mel Adams
1815 Knob Creek Ct.
Houston, TX 77062
meladams@tenet.edu

PROFILES OF OFFICER CANDIDATES

Vice President/Secondary

Nancy Grigassy

Nancy Grigassy is currently the chairman of the mathematics department at Stephen F. Austin High School in Sugar Land. She has held this position since the school opened in 1995. Nancy loves teaching and has taught high school for 27 years. She is also the Algebra II/Pre-calculus curriculum specialist and the gifted and talented Pre-calculus trainer for Fort Bend Independent School District. As curriculum specialist, Nancy has the opportunity to train teachers. She is amazed at how much mathematics teaching has changed during the last 27 years. Nancy is encouraged by the enthusiastic attitudes of teachers concerning the changes that are taking place.

Mrs. Grigassy is currently president of the Fort Bend Council of Teachers of Mathematics. She has presented at CAMT for ten years, and NCTM and Teachers Teaching with Technology (T^3).

Judy Rice

Judy Rice has been a teacher for 26 years. Her first ten years of teaching mathematics were at the middle school level where she taught 7th and 8th grade mathematics for Aldine ISD (Teague Middle School) and Alief ISD (Holub Middle School). In 1984, Judy decided to move to the high school level and spent 15 years at Alief Hastings High School. During her years at Hastings, Judy taught FOM, Pre-Algebra, Algebra I, Informal Geometry, Pre-calculus, MMA, and AP Calculus AB. Ms. Rice is currently teaching Algebra I and AP Calculus BC at Lawrence Elkins High School in Fort Bend ISD.

Judy has presented at CAMT several times as well as conducting workshops on Algebra I activities in Houston ISD and Colorado Springs, Colorado. She is also a TEXTEAMS trainer for Geometry for ALL and has been selected to be a trainer for the Algebra II/Pre-calculus Institute.

Ms. Rice has held several leadership positions in the local affiliate of NCTM (Fort Bend Council of Teachers of Mathematics). She served as membership chairperson (1993-1994) and President (1994-1995). Judy also served as the NCTM representative for TCTM from 1997-1999.

Thomas Ledvorowski

Thomas Ledvorowski is in his fourth year as teacher and mathematics department chairperson at Roosevelt High School, San Antonio. He is also a San Antonio Urban Systemic Initiative peer teacher and adjunct faculty member for mathematics at San Antonio Community college. Before moving to Texas, Thomas taught in Chino, California, for seven years. He also completed a Masters in Mathematics Education at Purdue University.

Mr. Ledvorowski was nominated for the Presidential Award for Outstanding Mathematics Teacher in 1994, Outstanding Teacher Award from the Tandy Corporation in 1992-94, and Outstanding Mathematics Teacher for the San Bernardino County in 1992. His memberships include NCTM and the San Antonio Mathematics Council.

Secretary

Paula Gustafson

Paula Gustafson spent the early years of her teaching career in small, rural districts in South Texas. The majority of her experience is in upper elementary and middle school math classrooms. Paula began to mentor other educators early in her career and has been blessed to work with many gifted instructors in the San Antonio area. Currently she serves as an educational specialist in mathematics for Education Service Center Region 20. For the past three years, she has also served as an officer in the Alamo District Council of Teachers of Mathematics. Publishing newsletters, organizing various meetings, and staff development has been the focus of Paula's work as an officer in that organization.

Mrs. Gustafson is a member of various professional organizations such as NCSM, NCTM, TCTM, ASCD, and TASM. She represents her region as a TEXTEAMS trainer and has worked as a facilitator with PBS Mathline. Paula is a mother of three. Her wish for the future is to help educators in providing an equitable, high quality mathematics education for all students in Texas.

Northeast Regional Director

Linda Antinone

Linda Antinone, a mathematics and science teacher with fifteen years experience has dedicated her career to helping students and teachers understand how mathematics is connected to science and the real world. She believes that through meaningful activities, all students can succeed at mathematical problem solving. The 1993 Presidential Award winner co-authored Real World Math with the CBL and Modeling Motion: High School Math Activities the CBR, both published by Texas Instruments.

Ms. Antinone has been an instructor for Teachers Teaching with Technology (T^3) since 1993, co-developing the Connecting Math and Science institute and serving as a member of the original Calculus institute development committee. She has a BS in mathematics and physics education and a MA in mathematics, both from Ohio State University. She is currently serving as the secondary mathematics coordinator for Fort Worth ISD. A member of the 1998 national NCTM program committee, Ms. Antinone is committed to attending and providing continued professional development. She has made over 300 presentations to teachers in 26 states since 1992.

Brenda DeBorde

Brenda DeBorde has been in education for over 25 years. She is currently the pre-K through 12 mathematics facilitator in Grand Prairie ISD. Other positions she has held include staff development specialist, instructional consultant, department head, and classroom teacher.

Brenda is a member of TASCD, NCTM, NCSM, TCTM, TASM, and NSTA. In addition, she is a certified trainer for Activities to Integrate Math and Science (AIMS), Mathematics Pentathlon, and TEXTEAMS TEKS Science. Ms. DeBorde has been nominated for the Presidential Award for the Teaching of Mathematics and/or Science seven times.

Northwest Regional Director

Beverly Anderson

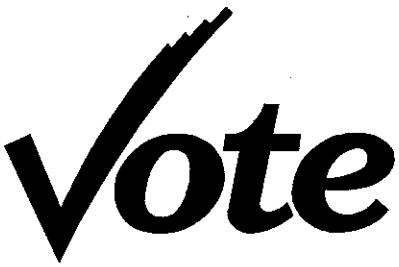
Beverly Anderson has been the Northwest Regional Director for TCTM for the past two years. She is the mathematics specialist for Education Service Center Region 17. Beverly has held this position for ten years. Prior to that, she was a classroom teacher for 16 years. Beverly is a member of NCTM, TCTM, TSPCTM, NCSM, TASM, West Texas ASCD, and TSDC.

Mrs. Anderson is married to Mark, with one stepdaughter, Casey. Beverly enjoys golf, sports, traveling, cooking, all kinds of puzzles, and arts and crafts. She was born and raised in Fredericksburg, Texas.

Central Regional Director

Cynthia Schneider

Cynthia Schneider received Secondary Certification in 1987 and continued at Southwest Texas State University (SWT) to complete her MA in Mathematics in December 1989. She taught mathematics at SWT, Austin Community College, and Southwestern University. In 1993 Cynthia passed qualifying exams for the Ph.D. at the University of Texas. Since 1996, she has been an employee of the Texas Statewide Systemic Initiative (SSI) at the Charles A. Dana Center in Austin.



BALLOT

Circle your choices below. Write-in candidate names are acceptable. The fold this ballot in three, staple, and mail. You may place it in an envelope and mail to the address on the next page if you prefer. **Please return by June 1, 2000.**

Vice-President Secondary

Nancy Grigassy **Thomas Ledvorowski** **Judy Rice**

Secretary

Paula Gustafson

Northeast Regional Director
Vote only if you live in these Service Center Regions:
7, 8, 10, 11

Linda Antinone Brenda DeBorde

Northwest Regional Director
Vote only if you live in these Service Center Regions:
9, 14, 16, 17

Beverly Anderson

Central Regional Director
Vote only if you live in these Service Center Regions:
12, 13, 20

Cindy Schneider

place
stamp
here

Pam Alexander
Rt. 4 Box 5212
Nacogdoches, TX 75964

TEXAS COUNCIL OF TEACHERS OF MATHEMATICS

Affiliated with the
National Council of Teachers of Mathematics

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When does YOUR membership expire?

Note the expiration date on your mailing label.
Use the membership form inside to renew **before** that date.

Texas Council of Teachers of Mathematics

Member 1999-2000

NAME _____

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