

# THE MATH PAPER

Vol. Fall 05.1



Published periodically by the Mathematics Department at Kirtland Community College, Roscommon, Mich.

## About us

THE MATH Paper is a tabloid published by the math tutors of Kirtland Community College. Its purpose is to provide a service to the Kirtland community by offering the opportunity to have fun with math.

There are people at Kirtland who have enjoyed and been successful with their studies of mathematics! For them, math is not associated with those negative attitudes of “hate” and “don’t like.”

Some of these people with a positive attitude toward math do a great service to Kirtland by working in the Tutoring Department, which is located in Rooms 18 and 20 in the Instructional Center (INS) on the KCC campus. A definite camaraderie exists between the mathematics tutors.

All of us hope you’ll have fun with the puzzles, games and other math-related information inside this edition of THE MATH Paper.



College math teachers from around the state became the students during the annual meeting of the Michigan Mathematical Association of Two-Year Colleges, which met at Kirtland in September.

## Kirtland conference has math as its common denominator

ROSCOMMON – Only at a conference intended to delight mathematicians could the keynote speaker hand out a story problem at 9 a.m. – and have everyone in the room participate. That’s exactly how Saturday, Sept. 24, began at Kirtland and it only got more interesting as the day proceeded.

The occasion was the annual fall meeting of the Michigan Mathematical

Association of Two-Year Colleges and throughout the day, members discussed teaching theories, shared ideas and learned about innovations in a field to which they are all devoted.

According to Kirtland mathematics instructor Doug Mace, the goal of MICHMATYC’s annual conference is to provide a forum for math teachers to share ideas with colleagues in order to

improve instruction in the classroom. He said the formal presentations were augmented by plenty of informal sharing during lunch and between sessions.

“The general idea is that the participants try to take one idea back to their classroom and implement it,” Mace said. The need to find teaching methods that work is especially important at Michigan’s

**See MICHMATYC, page 6**

# Go FIGURE!

## UNBELIEVABLE MATH PROBLEM

Christine Heavner found this unbelievable math problem on the Internet and dropped it off to THE MATH Paper.

1. Grab a calculator. (You won't be able to do this one in your head.)
2. Key in the first three digits of your seven-digit phone number. (Not the area code.)
3. Multiply by 80.
4. Add 1.
5. Multiply by 250.
6. Add the last four digits of your phone number.
7. Add the last four digits of your phone number again.
8. Subtract 250.
9. Divide by 2.

Do you recognize the number?

## NETWORK OF TWOS

How many numbers can you write using three 2s and no other symbols?

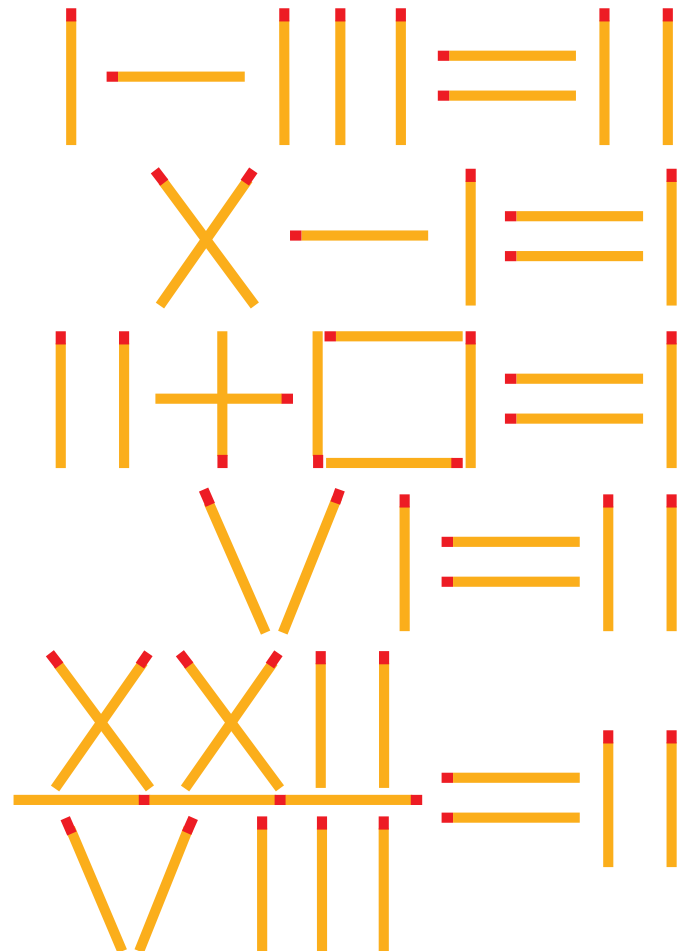


From "1000 Play Thinks: Puzzles, Paradoxes, Illusions & Games," by Ivan Moscovich. Published by Workman Publishing, New York. 2001. [www.workman.com](http://www.workman.com)

THE MATH Paper wishes to acknowledge Karen Sessions, Kirtland faculty support specialist, who helped in typing for THE MATH Paper and to Shirley Schaffer, Kirtland part-time faculty support specialist, who brought to our attention a book that belonged to her father, John "Jack" Schaffer. The book is "Mathematical Puzzles for Beginners and Enthusiasts," by Geoffrey Mott-Smith. Shirley describes her father as "a scholar under any meaning of the word." She conducted an estate sale where she sold many of his old books. Nick Holton, Kirtland math instructor, got a hold of this book and loaned it to THE MATH Paper. The following puzzle is from this book.

**MATHEMATICS EQUATIONS**

One of the possibilities in this field, little exploited, is the matchstick equation. The illustration gives five examples. Each row is a separate puzzle and equation given in Roman numerals. In the third puzzle, the square is intended to represent zero and must be read as such. All the equations are false as they stand, but each can be changed into a true equation by altering the position of only one match.



## HOW TO SOLVE NUMBER FILL-INS

A Number Fill-In is solved just like a regular Fill-In, using numbers instead of words. Across and down entries cross each other. Each digit in an across entry is part of a down entry. We provide you with the lists of numbers, arranged numerically by length.

To solve a Fill-In, start with the given number in the diagram and

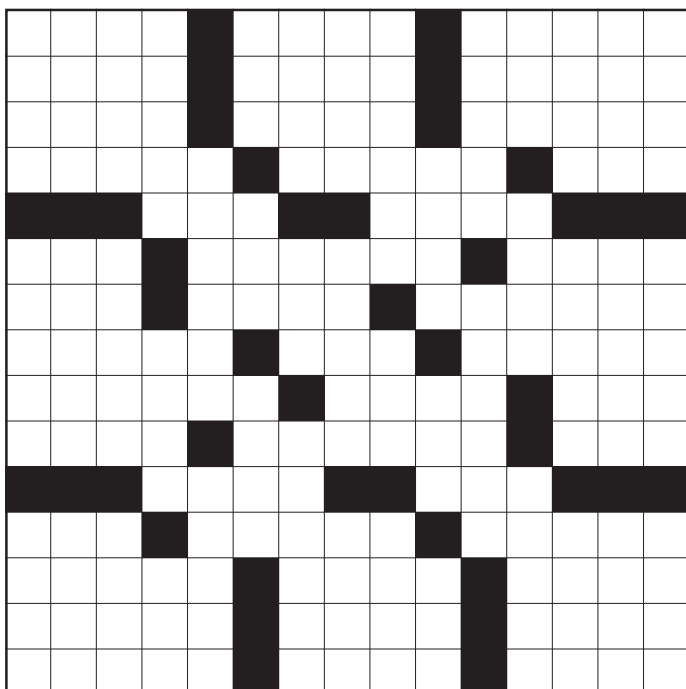
look for possible crossings. Pencil in one choice from the List. Now, look at the List and check to see if there are entries in the List that can cross your penciled-in choice. For example, if your penciled-in number starts with a "6," be sure there is a crossing entry with a "6" in the correct position. If there isn't, pencil in another

possibility.

Continue until you are sure your number is the one that fits there. Then, cross off that choice from the List. As you solve, the List gets smaller and solving is faster. We know you'll find these puzzles a relaxing diversion and a pleasant challenge.

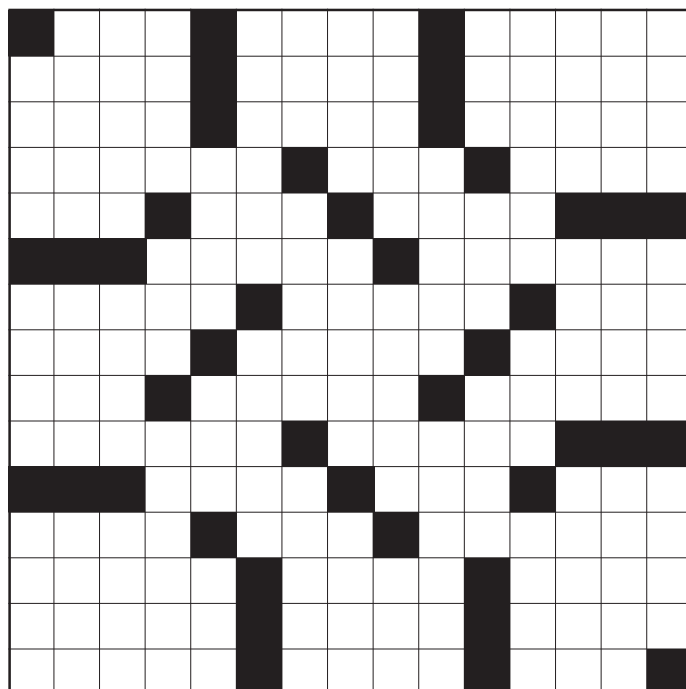
### PUZZLE 93

<b>LIST</b>	747	3739	6612	03180	67400
	748	3770	6637	03400	72446
	889	4102	6761	08325	76945
<b>3 DIGITS</b>	929	4240	6825	12039	85374
114	954	4403	6932	14314	94676
198		4714	7036	23588	96100
246	<b>4 DIGITS</b>	5179	7338	28266	
268	0277	5572	7444	29244	<b>6 DIGITS</b>
441	0473	5601	7502	32048	075413
460	0732	6098	7641	32172	102156
468	1458	6250	8137	43886	256363
472	2321	6263	8630	52570	362184
484	2412	6317	8774	53155	582251
555	2735	6379		54382	652365
611	2976	6402	<b>5 DIGITS</b>	56107	704464
632	3597	6423	01296	57186	780517



### PUZZLE 94

<b>LIST</b>	628	1903	7697	17716	74863
	658	1935	7717	24052	77460
	676	2127	7881	25758	79883
<b>3 DIGITS</b>	779	2274	7940	30025	83957
011	898	3138	8104	31751	87401
061	911	3284	8161	32381	91153
131		3406	8168	35295	
182	<b>4 DIGITS</b>	3663	8877	37561	<b>6 DIGITS</b>
198	0110	4236	9219	41170	042051
233	0209	4867	9391	50847	180138
248	1085	5325	9683	56727	219379
273	1180	5770	9848	58709	247672
326	1241	6036		60861	430605
425	1361	6869	<b>5 DIGITS</b>	61021	807400
510	1551	7512	05133	62996	832143
625	1652	7596	08102	68937	973424



# PICTURE THIS

Sometimes story problems in a math textbook seem like Greek or another language. Melinda Boudiette, who takes advantage of the Kirtland Tutoring Center for her Intermediate Algebra class, dropped off this printout that she found on the Internet. See if you can read it. This is an example of how a story problem might look to a Pre-algebra student.

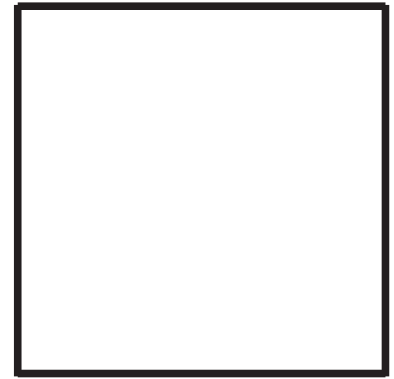
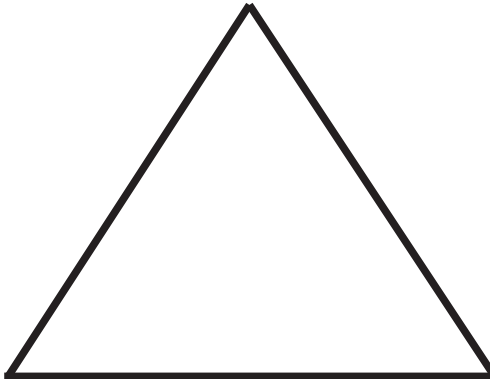
I cdnuolt blveiee taht I cluod aulacly uesdnatnrd waht I was rdanieg. The phaonmneal pweor of the hmuan mnid. Aoccdrnig to a rscheearch taem at Cmabrigde Uinervtisy, it deosn't mttar in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe. Such a dcondition is arppoiatly cllaed Typoglycemia:)

Amzanig huh? Yaeh and you awlyas thought slpeling was ipmorantt.

## Story Problem

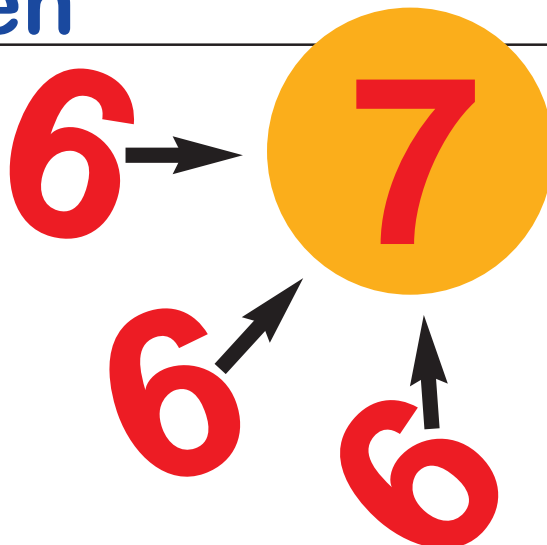
The following is a story problem from the book titled "Beginning Algebra DEV 073" by K. Elayn Martin-Gay.

49. The perimeter of an equilateral triangle is 7 inches more than the perimeter of a square, and the side of the triangle is 5 inches longer than the side of the square. Find the side of the triangle. (Hint: An equilateral triangle has three sides the same length.)



## Six – Seven

Is there a way to use three 6s to make a 7?



From "1000 Play Thinks: Puzzles, Paradoxes, Illusions & Games," by Ivan Moscovich. Published by Workman Publishing, New York. 2001. [www.workman.com](http://www.workman.com)

DO YOU HAVE A PUZZLE, GAME, PROBLEM OR OTHER TANTALIZING BIT OF INFORMATION THAT COULD BE USED IN THE MATH PAPER?

SEND IT ALONG, OR MAKE INQUIRIES, TO

HELEN SCHEER, PUBLISHER, AT [SCHEERH@KIRTLAND.EDU](mailto:SCHEERH@KIRTLAND.EDU).

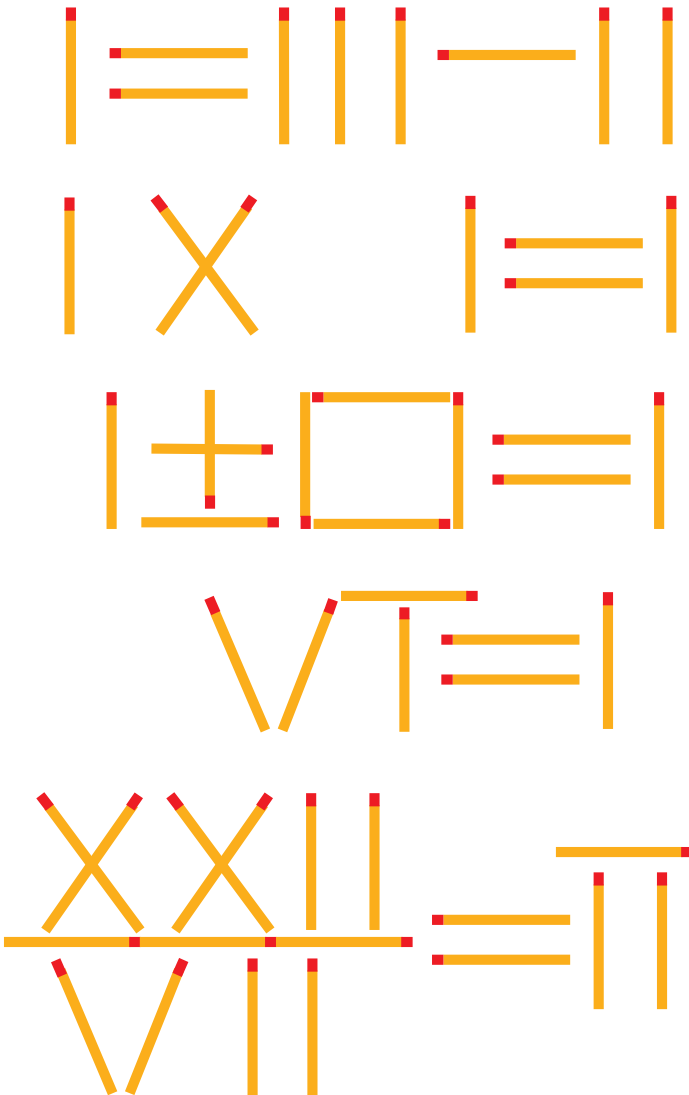
# SOLUTIONS!

You can write four numbers:

## NETWORK OF TWOS

- a.  $2^{2^2}$    b. 222   c.  $22^2 = 484$    d.  $2^{22} = 4,194,304$ , the largest number

MATCHSTICK EQUATIONS



## QUALITY NUMBER FILL-INS

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

#93

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

#94

## STORY PROBLEM

Equilateral triangle – Side of triangle is 5 inches longer than side (x) of square.

Square – Let x = side of square.

Perimeter – Perimeter of triangle is  $3(x + 5)$  or  $3x + 15$

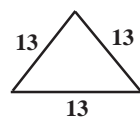
– Perimeter of square is  $4x$

Perimeter of the triangle = 7 + perimeter of the square

Therefore:  $3x + 15 = 7 + 4x$

$$\begin{array}{r} 3x + 15 = 7 + 4x \\ -3x \quad \quad -3x \\ \hline 15 = 7 + x \\ -7 \quad -7 \\ \hline 8 = x \end{array}$$

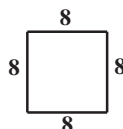
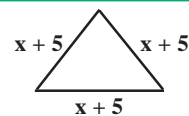
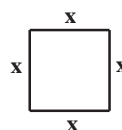
Therefore: if  $x = 8$



$x + 5$  means  $8 + 5$  or 13

Perimeter of triangle

=  $3 \times 13$  or 39 units



Perimeter of square

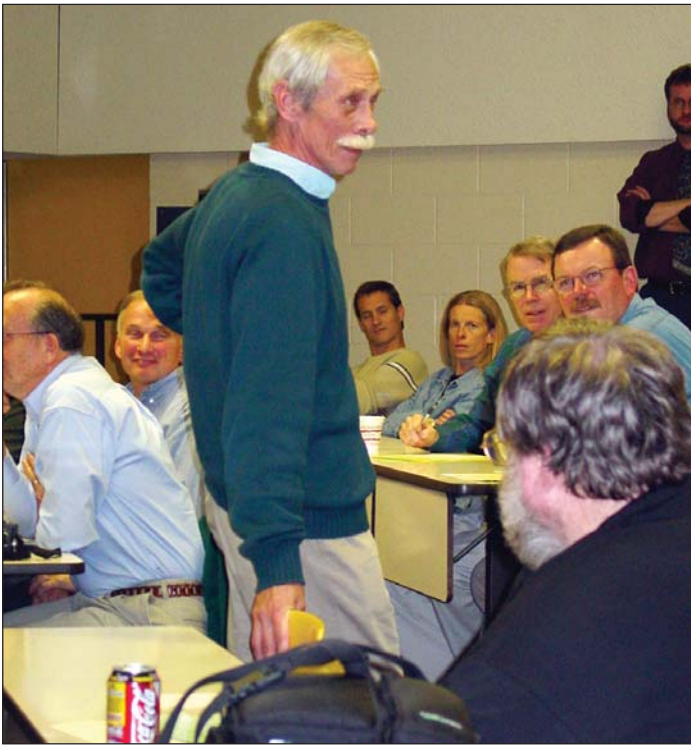
=  $4 \times 8$  or 32 units

Check:  $39 = 7 + 32$

## SIX-SEVEN

$$6 + 6/6 = 7$$

For assistance, call the Tutoring Center at 989-275-5000, ext. 379, or drop by!



## Physics – students up, teachers down

Left, Paul Hickman, chairman of the American Association of Physics Teachers, gave the feature presentation during the fall meeting of the Michigan Section of that group, hosted at Kirtland Community College on Saturday, Oct. 15. Part of Hickman's message pertained to the declining number of physics teachers – at all levels of education – and what could be done to encourage more students to become teachers. In addition, the conference showcased many current topics in physics – from dark energy to innovative teaching methods. About 40 physics teachers from around the state participated.

## MICHMATYC

Continued from page 1

two-year colleges such as Kirtland. Open-entry policies at these schools mean that students may be admitted with only the most rudimentary math skills and, therefore, everything from very basic to upper level math courses need to be offered to meet the public's needs.

There was no lack of ideas to be had at the Kirtland conference, offered during such sessions as "Competency-based developmental mathematics with an online twist," "The harmonious connections between mathematics and music" and "Functional fractional facts."

About 80 math instructors from all across the state made the trip to Kirtland for the conference, which is hosted at a different college every year.

For more information on MichMATYC or mathematics at Kirtland, call Mace at 989-275-5000, ext. 297.

## Classifieds

**Tutors and tutees** are needed for mathematics. Apply at the Kirtland Tutoring Center (INS 20).

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**Contributions to** or inquiries about THE MATH Paper can be directed to Helen Scheer, publisher, at [scheerh@kirtland.edu](mailto:scheerh@kirtland.edu).

# Math tutoring at Kirtland

The Kirtland Community College Tutoring Center welcomes a new coordinator, Kate Jakobson, following the retirement of Carol Silverman. We thank Carol for all her hard work and wish her the best of everything.

Kate comes to Kirtland with a strong background in tutoring and mathematics. She has a big challenge ahead of her, trying to meet

the needs of all the students requesting tutoring (more than 200 per year!). She is fortunate to have the help of Gene Warren, lead tutor in

English and other fields, who has

more than 20 years of experience. She also has the assistance of Helen Scheer, lead math tutor, and Whitney Barnes who does the odd jobs and covers the front desk.

**Service + Fun  
Math = Learning**



Kirtland math instructor and Service Learning coordinator Nick Holton has often said that Service Learning is more than tutoring! The Tutoring Center also enjoys the services of many

students and those of us at the end of the hall appreciate the following students who help others in THE MATH:

- Brandon Atkinson
- Naomi Butler
- Whitney Barnes
- Jesse Churchill
- Anita Doud
- Brian Gomez
- Jennifer Handrich
- Sarah Long
- Larry Martin
- Don Savage
- Chad Schultz

Tutoring services are free to Kirtland students. Hours are 8 a.m.-4:30 p.m., Monday through Friday. Drop in, or make an appointment at 989-275-5000, ext. 379.

Did you know, almost 50 percent of the tutoring at Kirtland is on the subject of math?! Helen Scheer's drop-in times are Monday, 8:30 a.m.-12:30 p.m.; Tuesday and Wednesday, 2:30-4:30 p.m.; and Thursday, 8:30-10:30 a.m.

**For a course or a career, check out Kirtland Community College!**

**[www.kirtland.edu](http://www.kirtland.edu)**  
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