

THE MATH LOCUS



Published periodically by the Mathematics Department
at Kirtland Community College, Roscommon, Mich.
<http://kirtland.edu/themathlocus>

About Us

The Tutoring and Student Success Center, under the leadership of Kate Jakobson, is a great example of Service Learning at Kirtland Community College. Nick Holton – a math instructor at KCC – is the Service Learning coordinator and has donated a large poster to our tutoring Center. The poster features women in mathematics throughout history. The MATH LOCUS will feature one of these great ladies in every issue. The last issue featured Florence Nightingale and the nursing profession.

At KCC you can find many of all ages who mentor, help and tutor. Geneve Warren is tutoring English as a Second Language; Caryn Schutte is the lead English tutor and the sign language tutor; Heidi Sura is one of the Writing Center specialists and is also the Writing Across the Curriculum Coordinator; Helen Scheer is a math instructor and lead mathematics tutor at KCC – she is the publisher of The MATH LOCUS; Ashley Quillen is the office assistant for the Tutoring Center.

Some of the students who tutor math are: Nick Anderson, Heather Chroach, Phil Collins,

See ABOUT US, page 2



At left is a picture of the family of a man who is placing his future in mathematics. The Timothy Davis Family (l-r) – Brook, Melissa (wife), Tim and Haily.

Why we do what we do

In the fall of 2006, I was teaching Finite Mathematics at Kirtland Community College. In my class was a pleasant young man, Timothy Davis, who was doing well. He would sit in the back of the room and was very quiet. Now that I think back on it, it seems as if he were a sponge, just soaking it up.

Tim would stay after class and we would talk about many things. He men-

See WHY WE DO, page 3

Could you use \$25? Enter this math contest

The MATH LOCUS thinks you have a great chance. All you have to do is solve this story problem and follow the rules. Good Luck!

Here is the problem:

A basketball team earned 82 points in one of their games. The number of one-point shots was one more than three times the number of two-point shots. The number of three-point shots was five less than the number of two-point shots. How many one-, two- and three-point shots were there?

Submit your answers to the

problem with your name, address and phone number by e-mail or US mail by May 1, 2009 (Post mark deadline) to: hscheer@kirtland.edu or Helen T. Scheer, Kirtland Community College, 10775 N. St. Helen Road, Roscommon, Michigan 48653.

The names of contestants with the correct answers will be put in a box. One name will be drawn from the box and that person will win \$25.

There is no penalty for getting help. We want you to learn.

Awareness of Square Root Day multiplies

From Wikipedia, the free encyclopedia

Square Root Day is a humorous holiday celebrated on dates where the day and the month are both the square root of the last two digits in the current year. For example, the last square root day was March 3, 2009 (3/3/09), and the next will be April 4, 2016 (4/4/16).

The final square root day of the century will occur on Sept. 9, 2081. Each century it is the same nine dates that are Square Root Days. The

next century, though, will also cover the remaining three months' square roots with 10/10/2100, 11/11/2121 and 12/12/2144, this only happens once per millennium.

Ron Gordon, a Redwood City, Calif., high school teacher, first created the day for 9/9/81. Gordon is the official public relations person and sends news releases to world media outlets. In addition, his daughter has got in on the act and set up a Facebook page for people to share how they were celebrating the day.

One suggested way of celebrating the holiday is by eating square radishes, or other root vegetables cut into shapes with square cross sections.

Full list of holidays

1/1/01	2/2/04	3/3/09
4/4/16	5/5/25	6/6/36
7/7/49	8/8/64	9/9/81
10/10/2100	11/11/2121	
12/12/2144		

See also: Darwin Day, Mole Day, Pi Day and Towel Day.

The beginning of our number system: Go figure!

The numbers we all use - 1, 2, 3, 4, etc. - are known as Arabic numbers to distinguish them from the Roman numerals - I, II, III, IV, V, VI, etc.

Actually, the Arabs popularized these numbers but they were originally used by the early Phoenician traders to count and keep track of

their trading accounts.

Have you ever asked why 1 means "one," and 2 means "two"?

The Roman numerals are easy to understand, but what was the logic behind the Phoenician numbers?

It's all about angles! It's the number of angles less than 180 degrees

- acute angles - found in the number.

If one writes the numbers down on a piece of paper in their older forms (see below), one quickly sees why.

No. 1 has one angle.

No. 2 has two angles.

No. 3 has three angles.

etc.; and 0 has no angles!

About Us

Continued from page 1

Tim Davis, Anita Doud, Matt Keeton, Melinda Killinger, Paul Owen, Mike Rau, Heather Reese, Kelly Rosebrugh, Scott Sullivan and Jody Wiggins. Scott is currently majoring in commercial photography and graphic design.

The Tutoring and Student Success Center also offers study groups for Anatomy and Physiology, Chemical Science, Economics and Accounting. All of these resources are free to students.

Heather Reese says there is something different in her home. They have a three-legged dog named Grizzly, a cat named Loki and two rats named Achilles and Thor. She enjoys camping and long days at the beach. She enjoys tutoring because she is able to help fellow students. She has a riddle for you:

If you have 10 fish and five of them drown, then three come back to life, how many fish do you have?



Melinda Killinger is pictured above with her two children, Victoria and Robin.

Answer: Ten, because fish cannot drown.

Melinda has been tutoring math for Kirtland Community College for several years. However, it is time for her to move on to Ferris State University next fall. We love her and will miss her. God speed to Melinda.

Nick Holton donated a poster about women in mathematics. It is on display in the Tutoring and Learning Center in INS Room 20. Stop by and see it.

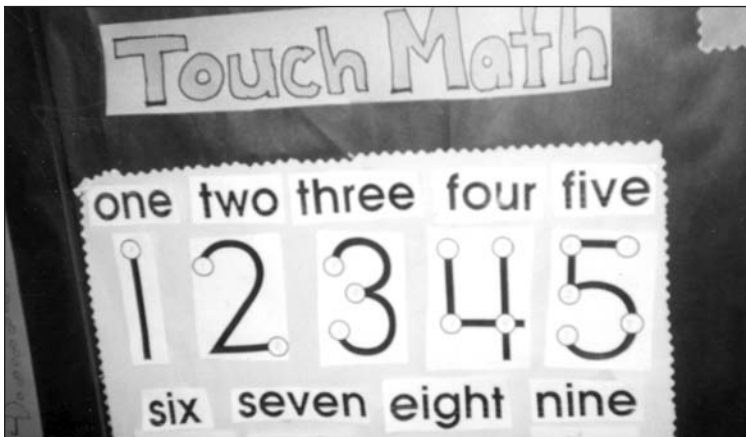
April 2009

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
April Showers bring May flowers.	Think Spring	Smell the flowers	A Day for Fools	2 times $(\sin^2 + \cos^2)$	$2 < X < 4$	One fourth raised to the negative one
The fourth root of 625	Number of sides in a hexagon	The largest single digit prime number.	Two cubed	The number of square feet in a square yard	The number of digits on two feet	The smallest two-digit prime number.
One less than a Baker's Dozen	Three more than two times five	Two times the sum of three and four.	The area of a rectangle three by five	Number of ounces in a pound	XVII	One and one half dozen
What is a prime number greater than 17 and less than 20.	The product of two squared and five.	The quotient of forty-two and two.	21.96 rounded to the units place	Complementary angle of 67 degrees	The product of two cubed and three	$\log X = 2$ 5
Two Baker's Dozens	The number of cubic inches in a box 3in by 3in by 3in.	$(25 * 28)^0 + 27$	The next prime number after 23.	"X " is the number of days in April, June, Sept. and Nov.	Have a great day!	"And now for the rest of the story." <i>Paul Harvey</i>

Mathematics for Elementary Teachers

One of the courses offered at Kirtland Community College is Mathematics for Elementary Teachers. Usually the students in this class put together a bulletin board in the Instruction Building at KCC across the hall from INS Room 1.

For Fall 2008 and part of Winter 09, the theme is Magic in Math. The display is a collage of topics, some of which are: inequalities, divisibility rules, complementary and supplementary angles, volume measurements, decimals and percents, nifty-nine tricks, touch math (below):



Other properties of inequalities include:

The trichotomy property which states:

- For any real numbers, a and b , exactly one of the following is true:
 - o $a < b$
 - o $a = b$
 - o $a > b$

The transitivity of inequalities states:

- For any real numbers, a , b , c :
 - o If $a > b$ and $b > c$; then $a > c$
 - o If $a < b$ and $b < c$; then $a < c$
 - o If $a > b$ and $b = c$; then $a > c$
 - o If $a < b$ and $b = c$; then $a < c$

INEQUALITY RULES TO: REVELRY

I don't know but I've been told
To solve inequalities you must be bold
Use properties of equa-a-tions
Then graph that sucker when you're done
Inequalities – equations, algebra ... Oh yeah!

To solve you undo what's been done
Be sure to treat both sides as one
You can't play favorites that's not the rule
Workin' one side is not too cool
Both sides
Be cool
Work both sides or you won't ... be cool!

If it starts out positive then you subtract
Include both sides or you might get whacked
To undo division simply multiply
Do it to both sides then let the answers fly
Do the opposite
Of what's been done
If you follow these hints then you'll be ... number one!

To graph the solutions you must decide
Do you shade in the circle or let it slide
If the symbol has a line underneath
You must shade it in or kiss my feet
Shade the circle
Let it slide
Shade the circle, let it slide. If you get this wrong ...
I'll cry!

There's two rules of inequalities
Not the same with equations, you see
If multiply or divide by a negative
You must flip the inequality so you can live
Multiply
Or divide
Multiply – or divide – by a negative...flip signs!
To graph greater than shade to the right
If done the other way, I'll die of fright
The smaller numbers are on the left
For less than, l – e – f – t is best
Greater – right
Less than – left
Get this right to make a good grade ... on the test!

Combined inequalities are so much fun
You put two on one graph then you're done
Conjunctions are joined by the word 'and'
'Or' joins disjunctions, man oh man
Conjunctions
Disjunctions
Conjunctions, disjunctions, 'and', 'or' ... get it right!

If 'and' then graph numbers in between
The outside numbers won't be seen
'Or' graphs numbers left and right
The in between numbers are out of sight
'And' graphs in
'Or' graphs out
'And' – in, 'Or' – out, get this right so there'll be ...
NO DOUBT!!

Women in Mathematics: Hypatia

370(?) - 415

Written by Ginny Adair, Class of 1998 (Agnes Scott College)

The life of Hypatia was one enriched with a passion for knowledge. Hypatia was the daughter of Theon, who was considered one of the most educated men in Alexandria, Egypt. Theon raised Hypatia in a world of education. Most historians now recognize Hypatia not only as a mathematician and scientist, but also as a philosopher.

Historians are uncertain of different aspects of Hypatia's life. For example, Hypatia's date of birth is one that is highly debated. Some historians believe that Hypatia was born in the year 370 AD. On the other hand, others argue that she was an older woman (around 60) at the time of her death, thus making her birth in the year 355 AD.

Throughout her childhood, Theon raised Hypatia in an environment of thought. Historians believe that Theon tried to raise the perfect human. Theon himself was a well-known scholar and a professor of mathematics at the University of Alexandria. Theon and Hypatia formed a strong bond as he taught Hypatia his own knowledge and shared his passion in the search for answers to the unknown. As Hypatia grew older, she began to develop an enthusiasm for mathematics and the sciences (astronomy and astrology).

Most historians believe that Hypatia surpassed her father's knowledge at a young age. However, while Hypatia was still under her father's discipline, he also developed for her a physical routine to ensure for her a healthy body as well as a highly functional mind. In her education, Theon instructed Hypatia on the different religions of the world and

taught her how to influence people with the power of words. He taught her the fundamentals of teaching, so that Hypatia became a profound orator. People from other cities came to study and learn from her.

Hypatia's studies included astronomy, astrology, and mathematics. References in letters by Synesius, one of Hypatia's students, credit Hypatia with the invention of the astrolabe, a device used in studying astronomy. However, other sources date this instrument back at least a century earlier. Claudius Ptolemy wrote extensively on the projection used on the plane astrolabe, and Hypatia's father wrote an astrolabe treatise that was the basis for much of what was written later in the Middle Ages. Hypatia did teach about astrolabes as Synesius had an instrument made that was arguably a

form of astrolabe.

Hypatia was known more for the work she did in mathematics than in astronomy, primarily for her work on the ideas of conic sections introduced by Apollonius. She edited the work *On the Conics* of Apollonius, which divided cones into different parts by a plane. This concept developed the ideas of hyperbolas, parabolas, and ellipses. With Hypatia's work on this important book, she made the concepts easier to understand, thus making the work survive through many centuries. Hypatia was the first woman to have such a profound impact on the survival of early thought in mathematics.

Hypatia lived in Alexandria when Christianity started to dominate over the other religions. In the early 390s, riots broke out frequently between the different religions. Cyril, a leader among the Christians, and Orestes, the civil governor, opposed each other. Hypatia was a friend of Orestes and it is believed that Cyril spread virulent rumors about her. In 415 AD, on Hypatia's way home, a mob attacked her, stripped her and killed her with pieces of broken pottery. Later, the mob dragged her through the streets.

Hypatia's life ended tragically, however her life's work remained. Later, Descartes, Newton, and Leibniz expanded on her work. Hypatia made extraordinary accomplishments for a woman in her time. Philosophers considered her a woman of great knowledge and an excellent teacher.

... she made the concepts easier to understand, thus making the work survive through many centuries.

Hypatia was the first woman to have such a profound impact on the survival of early thought in mathematics.

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BACK-PAGE PUZZLES

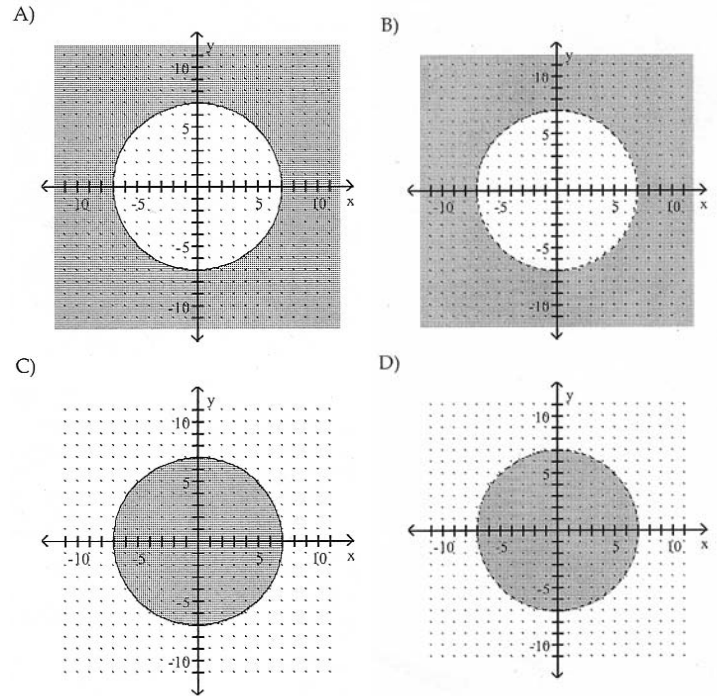
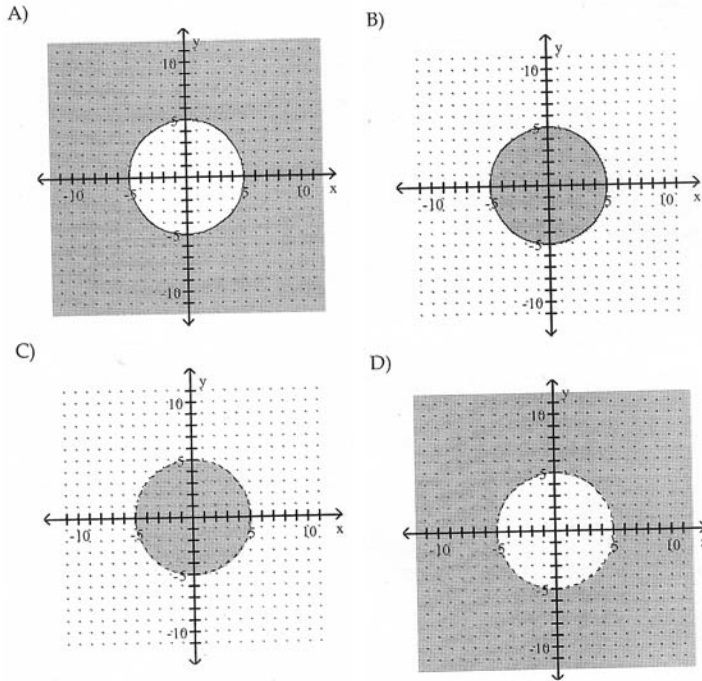
Locus is a Latin word meaning **place** and is the root of the English word, location. In a geometry class,

one might ask this question: “What is the locus of points equidistant from a given point?” The answer

would be: “A circle with the given distance as the radius and the given point as the center.”

Question 1: What is the locus of points for this inequality: $x^2 + y^2$ is less than or equal to 25

Question 2: What is the locus of points for this inequality: $x^2 + y^2 > 49$



PUZZLE SOLUTIONS

Page 3 Division Puzzles

- Puzzle #1 POKERHANDS
- Puzzle #2 IN THE WORLD

Back-Page Locus Puzzles

- Locus Question #1 “B”
- Locus Question #2 “B”

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