Math News

Vol. XXXI, No. 3 February, 2018

KME Corner

Kappa Mu Epsilon, our mathematics honor society, will have its next meeting on Thursday, March 1st at 6:00. The KME ceremony for induction of new members will be held on Sunday, March 4th at 2:00.

Solution to the "Square Switch" Problem

Who would operate bulb 64, for example? Persons numbered 1 & 64, 2 & 32, 16 & 4, and person 8. That is, all the factors will be in pairs, except for the 8th person. This means that for every person who switches bulb 64 on there will be someone to switch it off, except for person number 8. This will result in the bulb being turned on in the end.

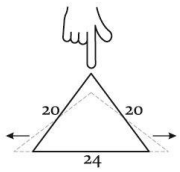
Why aren't all the bulbs on? Think of bulb 24: The factors are: 1 & 24, 2 & 12, 3 & 8, 4 & 6. So, since the pairs will cancel each other out, the bulb will end up back in its original state of being off.

So, only the perfect squares will be left on at the end! There are 10 square numbers between 1 and 100 (1, 4, 9, 16, 25, 36, 49, 64, 81 & 100), hence 10 bulbs remain on.

Sliding Triangle

by Derrick Niederman

The triangle shown lies on a flat surface and is pushed at the top vertex. The length of the congruent sides does not change, but the angle between the two congruent sides will increase, and the base will stretch. Initially, the area of the triangle will increase, but eventually the area will decrease, continuing until the triangle collapses.



What is the maximum area achieved during this process? And, what is the length of the base when this process is used to create a different triangle whose area is the same as our triangle?

MATH Fun Fridays

-- CCIT Room 245 --

March	02, 4-5	Dead Poets Society
March	09, 3-4	Rockband and Board Games
March	16, 3-4	Dead Poets Society
March	30, 3-4	Rockband and Board Games
April	06, 4-5	Dead Poets Society
April	13, 3-4	Rockband and Board Games
April	20, 3-4	Dead Poets Society
April	27, 3-4	Rockband and Board Games
May	04, 4-5	Dead Poets Society

Ending the Curse of Remedial Math

David L. Kirp (excepts)

"Can you simplify this square root?" Erica Fells asks her class, and hands wave in the air. All but one of the students believe that it's impossible to do so. The dissenter, Leslie Alcantara, lays out her argument. "What do the rest of you think of Leslie's reasoning?" Ms. Fells asks, and after some back-and-forth, they agree – she's correct.

These students have been admitted to one of the City University of New York's community colleges. They didn't score high enough on CUNY's math, reading, and writing tests to take college-credit courses, so they were steered into a catch-up program called CUNY Start. Its track record shows that, with good teaching and I-have-your-back counselling, youths who otherwise would likely drop out have a solid shot at making it.

Typically, such students fell behind in elementary school, and, as new concepts were piled on every year, they never caught up. Old-school remedial education in college – skill and drill, lecture-style classes, taken at the same time as college-level courses – offered more of the same.

The CUNY Start model is different. Full-time students are exclusively in Start classes for 25 hours a week – substantially more than the usual course load – for one semester. The focus is on thinking, not memorization. Ms. Fells: "I teach them how to investigate problems – how to think. The first sentence on the first day is a question. We start by making a connection to real life and slowly build a foundation of knowledge for more abstract algebraic problems."

The strategy is working: More than half the students who complete the program are ready for college in just one semester, something that's almost impossible with regular remedial courses. At the start of a recent term, many of the CUNY Start students couldn't handle negative numbers or decimal points. Ten weeks later, they had powered through arithmetic to algebra and were ready for college mathematics.

Mathematically Gifted and Black

The website *Mathematically Gifted and Black* celebrated Black History Month by honoring a different black mathematician every day of February! Learn more about the honorees at http://mathematicallygiftedandblack.com.

Upward Bound Opportunities

FSU's Upward Bound summer program is seeking mathematics-savvy Tutor/Counselors. For information, see http://www.frostburg.edu/clife/ubp/summer-positions-available/.

Math News is published for students, faculty, staff, and administrators by the Department of Mathematics.