Department of Mathematics

October 29, 2018

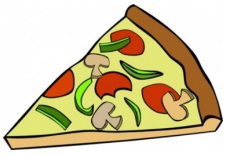
UNDERGRADUATE MATH SEMINAR

The next, *and final*, seminar of the term will be

DATE: **THURSDAY, November 1**

Time & **12:30pm –** Refreshments in **Bailey 204**

Location: **1:00 –** Seminar in **Bailey 207**



Professor Leila Khatami

In this seminar, **Professor Leila Khatami** from the Department of Mathematics at **Union College** will deliver the following talk

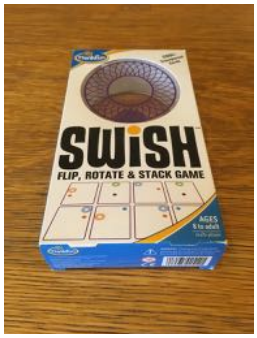
Title: Turning the Lights Out, Mathematician Style!

Abstract: "LIGHTS OUT!" is a single player game played on a 5 by 5 grid where each cell has a button that can be turned on or off. Pressing a button toggles the light in the cell and its neighboring cells. The game starts with some cells turned on and some turned off. The goal of the game is to turn all cells off. The game was originally introduced in 1995 as a handheld electronic game. Nowadays, the original game, as well as many of its variants, are readily accessible in app stores and elsewhere. It is not obvious (or even true!) that all starting configurations of the game are "solvable". In this talk, we use mathematical tools to see if a game is "solvable". We also briefly discuss ways to find the most efficient solutions for solvable games.

Math Club Game Night
by Kallan Piconi '20

On Wednesday, October 17, Math Club and The Association of Women in Mathematics (AWM) hosted a game night, playing the games Set and Swish. With pizza and some healthy competition, the night was a blast! Thanks to **Professors Ellen Gasparovic, Brenda Johnson,** and **Kim Plofker** for joining the fun.

Left: Diron Kelly and Professor Gasparovic playing SET.



Right: Professor Johnson playing Swish with two students

Math Club Volunteers at COCOA House, by Kallan Piconi '20

On Friday, October 19, Math Club volunteered at COCOA House. Members got to build some cool 3D shapes with the kids, and even practice some math problems! These crafts presented fun ways to introduce the kids to dodecagons, icosahedrons, hexagonal-based pyramids, and more.

Come join the fun!

The next Math Club meeting is
Wednesday,
October 31 at 1:00pm
in Bailey 204,
the Math Common Room.

"Wake Up and Smell the Coffee for a Performance Boost [in Math?]"

The following is from https://www.airesscentials.com/coffee-smell-boosts-performance/.

A new study recently published in the *Journal of Environmental Psychology* found that the smell of coffee improves performance in math.

Researcher Adriana Madzharov, a business professor from the Stevens Institute of Technology, did an experiment where 100 undergraduate students took a 10-question GMAT algebra test.
Half of the students were exposed to coffee fragrance in the testing room and the other half took the test in an unscented but otherwise identical room. The group in the coffee scented room score significantly higher on the test.

To determine why the coffee smell had this major effect on cognition and academic performance, she took another group of students and gave them a questionnaire about their beliefs about various scents. Participants said that they thought they would be more alert and energetic when in a coffee scented environment, compared to a flower-scented or unscented environment.

Madzharov concluded that the boost in analytical performance was at least partially based on a placebo effect. Whether or not the fragrance had a physiological influence on thinking or if it simply boosted confidence that translated into better performance, the end result is the same. Coffee scent significantly improves performance on analytical tasks.

Problem of the Newsletter – October 29, 2018

Last week's problem: Congratulations to **Noah Lehman-Borer, Khoa Ngo The,** and **Hoang Tran** for submitting correct answers to last week's problem. A solution has been posted at the newsletter sites in Bailey Hall.

This week's problem: Here's an odd one for you: Let *a, b* and *c* be odd integers. Prove that the equation $ax^2 + bx + c = 0$ does not have a rational root.

Professor Friedman (friedmap@union.edu) will accept solutions until midnight on Friday, November 2.