

# $\Sigma$ Sum Times

Issue 1

September 2008

Villanova University,

Dept. of Mathematical Sciences

## Welcome Back Faculty, Students & Staff!

### A Word from the Desk of Dr. Norton...

**Welcome back!** A lineal measure, the 40th part of a furlong, varying in actual extent according to the value locally assigned to this. (The smallest number that can be written as the sum of 3 cubes in 2 ways) x (the largest cube in the Fibonacci sequence).

That's definition IV19b of the word "fall" in the online Oxford English Dictionary, followed by  $251 \times 8 = 2008$ . Welcome to Fall 2008! We in the various Mathematical Sciences enjoy observing and discovering properties of numbers and other mathematical objects. Definitions, words, and language play a surprisingly significant role in our descriptions and analyses. As you calculate and articulate, quantify and verbify, in your classes and outside, may the measure (lineal or otherwise) of the sequence and sum of your semester be that of enjoyment, challenge, and success. Happy Fall 2008!

### Explore This Issue:

- ❖ Welcome Back!
- ❖ Upcoming Events
- ❖ Career Fair
- ❖ Phi Sigma Pi Info
- ❖ Math Office
- ❖ Math Club
- ❖ Maple Program
- ❖ MLRC
- ❖ Student Spotlight
- ❖  $\Sigma$  PARTY!!
- ❖ "Sum" Games

### Upcoming Events

Sept 12-14 <sup>th</sup>	Parents' Weekend
Sept 16 <sup>th</sup>	Career Fair from 2-6pm
Sept 16 <sup>th</sup>	Math Club Meeting
Sept 20 <sup>th</sup>	St. Thomas of Villanova Day
Sept 22 <sup>nd</sup>	Lorraine's Birthday!
Sept 26 <sup>th</sup>	$\Sigma$ PARTY!
Oct 6 <sup>th</sup> -10 <sup>th</sup>	Good luck on midterms!
Oct 13 <sup>th</sup> -19 <sup>th</sup>	Fall Break
Oct 22 <sup>nd</sup>	Grades due by 12 noon
Oct 24 <sup>th</sup> -26 <sup>th</sup>	Homecoming Weekend
Nov 7 <sup>th</sup> -9 <sup>th</sup>	Special Olympics Weekend
Nov 25 <sup>th</sup> -30 <sup>th</sup>	Thanksgiving Break

### Career Fair

If you are looking for an internship, full-time job, or want to make connections with potential employers, then head to the Pavilion where over 200 employers are waiting to meet you! Don't forget, Tuesday, September 16<sup>th</sup> from 2-6pm!

### Phi Sigma Pi Info Night

The Phi Sigma Pi National Honor Society is holding 30 minute info sessions on Tuesday, September 16<sup>th</sup> at 4:30, 5:30, 6:30, and 7:30 in St. Mary's Hall for eligible students who have completed 12 credit hours, have at least a 3.0 GPA and have a minimum of 2 remaining semesters. For more info, see [www.phisigmapi.org](http://www.phisigmapi.org) or email [expansion@phisigmapi.org](mailto:expansion@phisigmapi.org)

### Math Office

SAC 305

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610.519.4809,

Lorraine McGraw:

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## Math Club

Welcome back to Villanova, everyone! I hope you had a great summer and are ready for another fun school year. Welcome also to all new members of the Villanova community... We're thrilled to have you here!

My name is Jen Patch, this year's President of the Villanova Math Club, and I wanted to let everyone know that we are having our first meeting on Tuesday, September 16th. The meeting will be held at 5:00 in the MLRC (Math Learning & Resource Center). Snacks and refreshments will be provided, so please come out to learn more about the club and meet our members!

Last year, the Villanova Math Club was involved in a variety of different activities ranging from community service to participating in local competitions, to hosting guest speakers for Math Career Nights and helping put on the Math Department's annual Pi Day Party. We are looking for bright new faces to join our group and help us make this year our most successful yet, so if you have any questions, please feel free to contact me at [jennifer.patch@villanova.edu](mailto:jennifer.patch@villanova.edu).

I hope to see everyone on September 16th!



## MLRC

The Math Learning & Resource Center is full of friendly and intelligent math students who are waiting to help you with homework, projects, Maple, Matlab and Excel assignments! It is located next to the Writing Center on the 2<sup>nd</sup> Floor of Old Falvey and is open Sunday from 6:30pm and Monday-Thursday from 1-5, 6:30-9:30pm. Any questions just call (610) 519-MLRC or email [www.villanova.edu/mlrc](http://www.villanova.edu/mlrc)  
Good luck!

## Maple

Maple is now available for all students! You can sign up for a local installation on your laptop or PC. Maple is a required mathematics software for the Engineering and Science Calculus, Differential Equations, and Linear Algebra sequence courses and very useful for any type of math you want! For your personal copy, visit the info URL.

For additional information:

<http://www.villanova.edu/artsci/mathematics/resources/maple/>

If you have questions, please contact: [robert.jantzen@villanova.edu](mailto:robert.jantzen@villanova.edu)

## *Student Spotlight: Justin Wyrobek*

*Justin traveled to Seville this past semester. Here is a taste of his experience with architecture and how he found mathematics in the most beautiful places.*

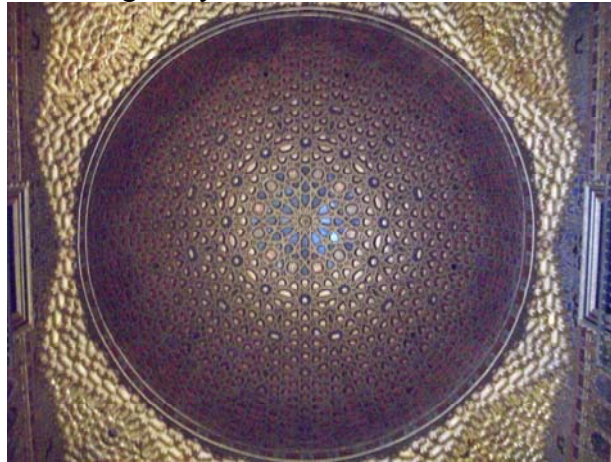
It is not infrequent in the study of mathematics where a person has a sudden, beautiful insight into the order of things. It is that ecstatic "Ah-ha!" moment where, abruptly, you get it. It's as if you feel privy to a secret known to no one else where, for a moment, the divine winks at you.

Last semester I had the privilege and the blessing of studying abroad. I was living in Seville in the south of Spain. Spain had been under Muslim occupation from 711 to 1492 where the last occupied territory was in the province where I was staying. Remnants of the incredible Arabic and Muslim influence were found everywhere in the culture and most notably in some of the architecture.

When I visited the "Royal Palaces" in Seville and the Al-hambra in Granada I was able to see first hand the beauty of that culture. I learned that, historically, Muslim palaces were meant to represent paradise. The culture had its roots in the desert and in lack of natural resource, so their heaven was one where there was lush growth, water, and beauty.

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I also learned that it was idolatrous to depict animals or people in their architecture, let alone holy figures such as angels and representations of God. Instead, I discovered that much of their architecture was meant to imitate nature. As they incorporated nature into their palaces with trees, flowers, and fountains, many of the ceilings were meant to imitate the sky. This ceiling in the Palaces of Seville in particular, is meant to represent the night sky.



Muslim architecture made use of other tools to adorn their palaces. One of which was to engrave holy writing in the walls. In Granada, for example, “Only God is victor,” was carved as a frame running across almost every wall. The other recourse that was used was geometry. Shapes and figures were particularly prominent. One can see in the photo imitating the night sky how geometric shapes are used to create such an impression.

It was in Granada, though, where I caught my wink. All over the walls there were geometric figures on the walls – what looked like an “8-sided square”. It was a square that had another square rotated 45 degrees superimposed on it. So in every side of the first, normal square there was a corner of a second square protruding. I didn’t find this very impressive at first, and a bit uninteresting. But then I started looking at the ceilings. Muslim architecture included a lot of *mocarabe* – carving into the plaster on the ceiling to give it depth and form shapes. I fixed my gaze above and let it sit for a second. In moments a surge of excitement hit me as I realized that this pattern, this “8-sided square” was carved subtly into the ceiling using the *mocarabe*. The shape is formed from a difference in depth, rather than a distinct tracing using different colors. I was very pleased and content to realize what no one else at the time at pointed out, and even more in awe of this relation between geometry and art. In that moment, the same Order that created beauty in both art and mathematics winked at me, and I with gratitude, winked back.



DAVID FOSTER 2003

# You're invited to the $\Sigma$ Party!



$\Sigma$  = (Freshman + Sophomores + Juniors + Seniors + Faculty)

Friday, September 26<sup>th</sup>  
12-3pm  
SAC Conference Room 305

The Math Office is throwing a welcome back and welcome to the 2008-2009 academic school year celebration! Bring your appetites for sandwiches, snacks and, of course, a  $\Sigma$  cake!

## “Sum” Games

The following are “magic squares” which are square grids of numbers containing all the numbers 1, 2, 3, etc.

Each number is listed once and each row, column and diagonal must add up to the same number! Each magic square has a special “sum”, the number which every row, column and diagonal add up to. Can you fill in all the squares and determine the magic “sum” number?

Write the numbers from 1 to 9, so that each row, column and diagonal add up to the same number

	1	
4		2

What is the magic “sum”? \_\_\_\_\_

Write the numbers from 1 to 16, so that each row, column and diagonal add up to the same number

15		9	8
			11
3		5	
10	7	16	

What is the magic “sum”? \_\_\_\_\_

Write the numbers from 1 to 25, so that each row, column and diagonal add up to the same number

24	2	4		18
	22	11	8	
12		10		16
	20			23
	7		21	

What is the magic “sum”? \_\_\_\_\_

Write the numbers from 1 to 36, so that each row, column and diagonal add up to the same number

11	29		31		
26	36	9	3		22
		23	10	16	33
	7	30	32	27	2
34	12		17		24
		28			5

What is the magic “sum”? \_\_\_\_\_

Write the numbers from 1 to 49, so that each row, column and diagonal add up to the same number

5	34	25	46		27	
39		19	42	22		20
18		36	10	13		41
47	17				33	4
	7		12	38	32	44
35	11		16	45		37
29	48	26	6		21	14

What is the magic “sum”? \_\_\_\_\_

Write the numbers from 1 to 64, so that each row, column and diagonal add up to the same number

55		27	14	15	44		42
34		29				18	41
	56	13	6		50	32	22
62	51	20		7	30	8	37
3	35	12	64			60	1
28	10	54	11	53	24	31	
16	21	57	38		5	33	43
	59		19	36	52	17	

What is the magic “sum”? \_\_\_\_\_

Now can you create a few tables of your own? If you can, send a few in for the next edition of the  $\Sigma$  Times!

Email [elizabeth.zagar@villanova.edu](mailto:elizabeth.zagar@villanova.edu)

If you have any trouble, check out Dr. Mike’s Website for help <http://www.dr-mikes-math-games-for-kids.com/magic-squares.html>