Welcome to the winter term. We hope you had a wonderful December recess and that your winter term is off to a good start.

The Math Department's weekly newsletter will keep you informed of math related events in the department, on campus, and in the world around us. It is distributed via email and is also available online (https://www.union.edu/mathematics/newsletters). If you would like to be added to our mailing list, please contact Joanne Higgins (higginsj@union.edu) or Professor Paul Friedman (friedmap@union.edu).

Math Club: Get Involved!

If you were unable to attend this past Friday's Club Expo to sign-up for the Math Club, don't fret. Simply reach out to the Math Club's President Lily Dong (dongl@union.edu) to be put on the mailing list and to stay informed of upcoming events. The Math Club will likely be meeting on Tuesday during common hour, 1:15 – 2:15pm. Since this has not been finalized yet, contact Lily for exact details and the Zoom link.

Upcoming: Mathematical Contest in Modeling

Get ready for the Consortium for Mathematics and Its Applications (COMAP) 2021 Mathematical Contest in Modeling (MCM) and Interdisciplinary Contest in Modeling (ICM). This international contest challenges teams of students to analyze and propose solutions to open-ended real-world problems. It is a *100-hour* affair that will run from **Thursday, February 4** to **Monday, February 8.**

In this contest, teams of up to three students choose one of six problems to work on over a long weekend, ultimately producing a solution/report for online submission to COMAP. The six problems to choose from are categorized as continuous, discrete, data insights, operations research/network science, or policy – something for everyone! Participating teams may use any resources they want to develop a model and a solution. Past problems include stunt-person landing, water strategy, radio propagation, eradicating Ebola, cooperation between self-driving cars, and many others. For more information about the contests, go to the COMAP website https://www.comap/com/undergraduate/contests.

As an added perk, this year's four top MCM/ICM teams will receive $10,000 ($9000 being split among the team members and $1000 to their school).

Under **Professor Jue Wang**'s guidance, teams from Union have done quite well in these contests. Prof. Wang is again coordinating Union's participation in these contests. If you are intrigued and/or would like to participate, please contact her: wangj@union.edu.

CALCULUS HELP CENTER!
Sunday, Tuesday, and Thursday: 7:30 – 10:00pm
Zoom: 995 1676 8139

Problem of the Newsletter – January 18, 2021

This week's problem: Explain why, in a standard multiplication table, the entries in each L-shape (gnomon) sum to a perfect cube. Then use this to show, via an n x n multiplication square,

$$1^3+2^3+\ldots+n^3=(n^2)(\text{central value})=(n(n+1)/2)^2.$$

Send solutions to **Professor Paul Friedman** (friedmap@union.edu) by noon, Friday, January 22.

X	1	2	3	4	5	6	7
1	1	2	3	4	5	6	7
2	2	4	5	3	10	12	14
3	3	6	9	12	15	18	21
4	4	8	12	16	10	24	28
5	5	10	15	20	25	30	35
6	6	12	18	24	30	36	12
7	7	14	21	28	35	42	49