

# math news

Vol. XXVII, No. 3

February, 2014

## Solution to our Previous Puzzle

When the mean, median, and mode of the list

2, 2, 2, 4, 5, 10, x

are arranged in increasing order, they form a non-constant arithmetic progression. What is the sum of all possible real values of x?

Note that the median can be 2 or 4 or x (depending on the value of x). We can rule out 2 for the median, since the mode is 2. That means  $x > 2$ . Hence there are two cases. Also note that the mean is greater than  $27/7$ . In case the median is 4, x must be larger than 4 and the mean must be 6, so x would have to be 17. In case x is the median, we must have  $2 < x < 4$ . We see if  $x = 3$ , then the mean is 4, and that case is closed. The sum of the possible x values is  $3 + 17 = 20$ .

## The Wondrous Mathematics of Winter

by Professor Gregory Buck of Saint Anselm College on [newyorker.com](http://newyorker.com)

I have had people ask me what it is like to do research in mathematics, and perhaps the answer is that it is like a snowstorm. As the snow falls, the light dims and the world goes gray. Local distinctions are lost, sharp curves disappear, and the world is made softer, quieter, and simpler. When the sun comes out, the way we see the world has been transformed to a place of startling clarity and simplicity. A ski area in summer is a rugged, foreboding place, full of crags, rocks and brush, rough to look at and to hike. But the snow falls, and fills the holes and softens the points, and the jagged becomes smooth. A snow-covered hill is a mathematician's dream come to this earth. All detail is gone, and there is nothing but the surface itself. This is the joy captured by the helicopter shot of the lone skier in the untrammelled backcountry bowl. At that moment the skier experiences a pure surface, and there is nothing but the contour of the slope. The skier might be a drop of milk rolling down the side of a ceramic breakfast bowl. The snow-covered hills resemble nothing so much as the abstract surfaces that mathematicians draw for themselves on blackboards (with white chalk)—the simplest set of curves, which only convey shape. The snow-covered world is an abstraction of the world that lies underneath: the details are smoothed over, the color is removed, and all that is left is an essence of shape. These are the forms that one can work with. This is how the mathematician thinks.

## KME Corner

The annual KME induction ceremony is scheduled for Sunday, March 2<sup>nd</sup> at 2:00 in Compton Hall 226. Dr. Frank Barnett will be giving a lecture on Bitcoins after the ceremony. Also, KME's annual bake sale will occur in March.

## Spring into the Fall

Here is the list of upper-level courses scheduled for Fall. Registration begins March 31. Plan ahead to see your advisor.

MATH 236, MTRF 8 AM, Dr. Lance Revenaugh

MATH 236, MTRF 11 AM, Dr. Mark Hughes

MATH 236, MTRF 2 PM, Dr. Mark Hughes

MATH 237, MTRF 11 AM, Dr. Robert Forsythe

MATH 237, MTRF 2 PM, Dr. Laxman Hegde

MATH 238, MTRF 11 AM, Dr. Frank Barnett

MATH 350, MWF 1 PM, Dr. Frank Barnett

MATH 432, MWF 12 PM, Dr. Justin Dunmyre

MATH 460, MWF 10 AM, Dr. Mark Hughes

MATH 451, TR 12:30 PM Dr. Justin Dunmyre

MATH 680, MWF 11 AM, Dr. Lance Revenaugh

## Doctor, Doctor

Congratulations is due to mathematics faculty member Nazanin Tootoonchi, who joined the mathematics department as an instructor in fall 2003. She continues to be interested in elementary mathematics education, middle school mathematics education, online education, and conducting research about online mathematics education. In 2005 she started a doctorate degree in mathematics education at Morgan State University as a part time student. It took her about 5 years to complete the required course work and she spent the last three and a half years to complete her dissertation, "College Students' Perceptions of Learning Environment in Online Mathematics Classes: A Qualitative Study," which she successfully defended on November 25, 2013. A copy of her dissertation will soon be available at the library of Morgan State University for review by those who may be interested in this topic.

## Creativity Required!

Here's this issue's problem, designed to really get you thinking "out of the box". Extend this pattern:

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