

# What do teachers do all summer?

What do teachers do all summer? Well, 24 teachers from various parts of Colorado spent four days with me at a math retreat in Estes Park hosted by the Northern Colorado Middle School Math Teachers' Circle.

We were not engaged in traditional math problems. We did not even do many problems that could be taken to the classroom. These problems required much thinking, comparing and application of processing skills that had not been used by many of us in years.

During the long days and evenings of challenging math, we coined a new word "funstration" — it was fun but frustrating because of the complexity of the problems and solutions. The Northern Colorado Math Teachers' Circle was started two years ago when two professors of mathematics from the University of Northern Colorado, Cathleen Craviotto and Gulden Karakok were invited to bring three teachers from Greeley to the American Mathematics Institute (AIM)

in Palo Alto, Calif., for a week of training in Math Teachers' Circles. The two professors along with a new associate, Katie Morrison, presented problems for the group for two days. The other two days, Paul Zeitz from the University of San Francisco presented more challenges.

Some of you may be thinking, "Right, a summer vacation paid for by the taxpayers." The event was actually paid for by sponsors who are concerned about the fate of education in the United States. The sponsors include State Farm Insurance, BBVA Compass Bank, Mathematical Sciences Research Institute and American Institute of Mathematics.

Ever since that California trip, Northern Colorado Math Teachers' Circle has been meeting once a month at the University of Northern Colo-

rado. The group is growing and the idea of "funstration" is catching on. Generally, teachers spend several weeks during their summer break taking classes in classroom management, updating the curriculum and learning how the new Core standards will affect what takes place in their classrooms. The Math Teachers' Circle is different because it involves teachers doing math at the teacher's level of application. Teachers are given complex problems to solve involving multiple methods of solution and understanding. Teachers worked in small groups to find solutions and explain their reasoning to the larger group. The process was the same as used in our classrooms, but the level of difficulty was at the teachers' level. Several teachers commented on identifying with the frustration felt by students in the classroom after working on the problems.

"It is helpful to see how the professors monitor the frustration of the teachers in the group and ask them questions

to help them think themselves out of their dilemma before they shut down," said one of my fellow teachers. "It has taught me by example, to tune in to my students and help them without providing them with answers. It really helps them develop confidence in their own abilities."

The Middle School Math Teachers' Circle will continue to meet the second Monday evening of each month in Ross Hall on the UNC campus. Any middle school or secondary teacher in the area is invited to attend and enjoy engaging problem solving, a light meal and some great association with some great people. Contact Julie at [jsamsel@greeleyschools.org](mailto:jsamsel@greeleyschools.org) or Gulden at [gulden.karakok@unco.edu](mailto:gulden.karakok@unco.edu) for more information, or visit the Northern Colorado Math Teachers' Circle website: <http://www.unco.edu/nhs/mathsci/mtc>.

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