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Calculators on a test? New calculators may affect how you choose to assess.

—Connie Buller, Metropolitan CC

There is a new type of calculator: one of the Casios. Looks almost exactly like a scientific calculator. Costs roughly \$15. Has pasted over its display window an example of how it can rationalize denominators:

$$\frac{\sqrt{50}}{5} \cdot \frac{2}{\sqrt{3}} = \frac{2\sqrt{6}}{3} \quad \text{--and it can do more.}$$

What does that do to my Intermediate Algebra test on the chapter introducing students to radicals? I may take an idea I got at the Spring '08 NEBMATYC conference in Lincoln. In response to a question on how we use calculators in our classes, Dean Nimic from Southeast CC said he gives 2-part exams in calculus, with the graphing part NON-calculator (!) and definitely no calculators on exams in earlier classes.

Mathematics teachers agree that we want our students to do well and learn their mathematics. Calculators can help students learn and apply math concepts. The newer “CAS” calculators from Texas Instruments, like the TI 89, and TI NSpire, will do algebra step by step, will factor polynomials, calculate derivatives, and more. When teaching basic algebra skills, like factoring a trinomial, or simplifying and solving linear equations, most teachers ban these calculators on tests.

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An Occasional Newsletter, Volume 2008-9: 1
 September, 2008
 Editor, Connie Buller, Metropolitan CC, Omaha
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President: Dale Johanson, Northeast CC
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2009 NEBMATYC: Central CC Grand Island, Fri. April 3, 2009

2009 Conference Chairs: Kathy Boehler, Kristi Korensky, and Kathy Woitaszewski, Central CC, Grand Island

Call for Teaching Excellence 08-9:

We need to celebrate our own. Nominate a colleague. John Miller, past president of NEBMATYC, has agreed to chair the Excellence in Teaching Award Committee.

National AMATYC: Washington, DC Nov. 20-23, 2008 “Opening Doors Through Mathematics”—discount registration through Sept 30, 2008. www.amatyc.org
November 20-23, 2008

NEWS from Your College?
 IDEAS to share?
 COMMENTS?

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Award Winner 2007-8
Don Moser, Northeast CC

As an instructor in applied math for auto and diesel technology, drafting, building construction, nursing, and basic college math and elementary algebra, Don has a constant stream of students during day and evening hours. He has practical experience with Moser Construction, a company he has owned and operated for more than twenty years. A student, wrote: "Have you ever had a teacher that seems to truly care if you do well on your homework as well as your tests? I have, his name is Mr. Moser. I have him for my Dosage Calculation teacher...one day I was just sitting in the hall working on homework, and he came over without me even asking him to and sat there with me for at least 45 minutes until I understood how to reconstitute medicine. I really appreciate him being so patient with me even when I had the "I HATE MATH" attitude which was almost every day..." A.B. Another student, LL, wrote, "On our first day of class Mr. Moser came in with his big, welcoming smile that he rarely ever loses. He then took it upon himself to try to get to know each and every one of his students, and for them also to get to know each other. This made classes that much better to attend, considering we would get to see each other almost every day of the week...Mr. Moser would always take the extra time that was needed...even if that meant explaining it for what probably seemed the millionth time...get everyone involved during class time..When students are more involved in the lessons they become more active in the learning process, and that he understands." There were more comments, from more colleagues and students! Congratulations, Don Moser!--from the files of the Teaching Excellence Committee .



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Congruent Triangles linked to a most frightening trail

Recently in geometry class we had a problem on measuring distance across a canyon. The person, standing near the edge, looked across the chasm to a point, swiveled keeping the angle of her eyes, noted a plant or rock at the same level on ground she could walk to, stepped it off, and claimed that that was the distance across the canyon—and thus knew ahead of time how long to make the bridge. (congruent triangles: $ASA = ASA$; corresponding parts of congruent triangles are equal)

We spoke of how the pioneers traveling across the US had some of their most difficult times crossing canyons and rivers, and in some of the old guide books this method was taught.

That reminded me of a YouTube video, about a most frightening trail. My son Andrew was kind enough to find it and send it along.

If you open it, it runs about 6 minutes, and should have music along with the pictures. See below.

It is in Spain, built about 1905, and called Caminito del Rey (the King of Spain walked it in 1921).

—Connie Buller, Metropolitan CC

<http://www.youtube.com/watch?v=xNSVcmBnt-o&feature=related>

The Changing Nature of the College Classroom—A Need for Discipline

—Connie Buller, Metropolitan CC

In the past, the “average” community college student was a female in her late 20’s. The classrooms were mostly filled with adults, who were very serious about their education, coming back to school to qualify for higher-paying jobs. Teachers didn’t really need to be concerned with classroom discipline. In the first place, the students wanted to learn, and in the second place, the students themselves usually took care of the occasional disruptive student. They were paying for their education, they were juggling house, work and school, they understood that college goes faster than high school, and nobody was going to ruin their chance for a better life just because of immature behavior.

Community colleges became successful, as news spread of smaller classes, taught by qualified, experienced teachers, costing far less than traditional universities but with courses that would transfer to those same universities.

Today the community college classroom has many more students coming straight from high school (and in the case of dual enrollment, students still enrolled in high school).

Additionally, students can stay on their family health insurance while they are enrolled full-time in college, and the health insurance companies are far more likely to be checking the status of these dependent children. Even an “F” is better than dropping.

The balance has changed. In the past, the older students were in the majority, and there wasn’t too much disruptive behavior. The teacher didn’t have to worry, because the other students would show by example that education was the main reason they were there—and complain quickly about the few disruptive students. Today a community college teacher has to be nearly as much concerned about discipline as are high school teachers.

Why, then, discipline? The reason is simple: if a student wishes to learn, he or she should have a fair chance to learn, and not have that chance taken away by distractions caused by such things as pairs of students whispering or talking—even “about math!”—while the class as

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a whole is trying to learn a concept. **Students with disabilities are at particular risk** of being prevented from learning when classroom discipline is not present. **We teachers cannot ignore the problem.**

There are many techniques:

- Involving students in the educational process by giving them a chance to work together for minute problems in a “pair-share” situation, and then going back to whole class discussion of the topic.
- Asking students, “What are your questions?” and then waiting 30 seconds so they can ask in class rather than their neighbor—the question often is quite a good one, and furthers the entire class understanding. If there are persistent chatterers, the teacher can pause in talking, and say, “Denise, what is your question? No? Amy, then you must have a question—it is a good one, and will help us all.”
- Using breaks or coming to the classroom area early to speak privately with the disruptive students. Sometimes they really don’t want to be in school, and you can help them decide what they want to do instead. Just listening to a student, caring about him or her as a human being with a future, can make a change in classroom behavior.

If the classroom techniques don’t work, however, the disruptive students need to leave, and not return until they have spoken directly with the teacher, convincing the teacher that they will allow their classmates to learn. **Even if only one student wants to learn**, he or she should have a fair chance. **Campus security will help**—call them.

Spring '08 Conference Memories NEBMATYC Lincoln, April 13, 2008

We met at near Gretna to carpool with Debi Martin, Mary Piernicky, Marcia Molle, Patricia Conrad and Dean Marshall to drive to the 88th and O Lincoln campus of Southeast CC. It was above freezing, but fat snowflakes were falling and the wind was gusting.

The conversation was lively as we math teachers enjoyed being with each other and spoke of possible teaching solutions and new ways of presenting math to our students.

Dustin Walsh, a Project ACCESS Fellow who teaches at SECC, was our conference host. Pete Wildman, our AMATYC regional VP, and national Teaching Excellence winner, was supposed to have driven in from Wyoming, but out West there were blizzards, and Pete didn't arrive. Dustin rearranged our schedule a bit, and it all worked.

We enjoyed seeing products from various publishing companies: Pearson (Addison-Wesley and Prentice Hall), McGraw Hill, Houghton Mifflin, Wiley and Sons. We saw a demonstration by Clark Bierle and John Mathews from McGraw Hill demonstration on clickers (CPS Student Response Systems).

Dustin divided us into groups to share our best teaching tips: in my small group, Ju Hall from Hastings, (last year's Nebraska Teaching Excellence winner), shared how she works the statistics projects she assigns her students. She takes care that students truly analyze data, communicate clearly and thoughtfully, with each group having their own project. Marcia Molle from Metro had attended a national NADE conference and brought an idea on *how* to use short answer "minute papers" in developmental classes, and some samples. I could see how they should help students learn the thinking behind the number theory involved in

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factoring trinomials, and so I used it in my classes the next week. (And it worked well, so I will do it again next quarter too).

Dean Marshall from Metro CC spoke on how the trades and industrial people are coming to partner with math teachers, and that Metro is one of the very few community colleges involved in these national CTE (Commercial Technical Education) discussions, because up until now this National Science Foundation group has been primarily working only with high schools. At NEBMATYC he shared part of his presentation, and invited the other colleges to join Metro on that day. There was a lot of discussion, and Don Mosely, from Northeast CC, said he *can* have math classes aligned with specific trades, although each class has the same course objectives listed in the syllabus. **Don told an amusing story. A grumpy diesel mechanics student** complained about learning the volume of cylinders. Don said, "Wait, what is the bore of a piston?" (diameter of a cylinder), and once the student got the connection all was well. I used that in algebra class next week in our discussion of formulas. In Dean's discussion, it was mentioned that **in math we talk about writing the equation of a line $y = mx + b$, but business teachers use $y = a + bx$** , and the statistics people at NEBMATYC said yes, they use that formula too. The slope is the lead coefficient in both cases, and in parabolas the lead coefficient is the steepness of the parabola.

Assessing Math Objectives—with or without certain calculators

(continued from page 1)

Many elementary teachers ban calculators on tests over basic arithmetic skills like the times tables, subtraction of decimals such as $3.0045 - 0.23$ or multiplying fractions. Many teachers ban calculators in beginning algebra classes, but require scientific or graphing calculators in intermediate and college algebra courses. However, in classes beyond algebra, the new CAS (computer algebra system) calculators may be very useful, allowing concepts to be assessed without the instructor having to take care that the algebra doesn't get too time-consuming for testing situations.

Most graphing calculators at least LOOK significantly different than ordinary scientific calculators--and the TI Nspire with its CAS even looks completely newer than the ordinary graphing calculators. National tests like the ACT and SAT allow only certain types of calculators on their tests. If you do use calculators when assessing mastery of algebraic technique, be aware that calculators are, indeed, different.

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