Do YOU know someone who should apply?

NebraskaMATH is now accepting applications for five of its programs. Four are professional development programs for mathematics teachers:

- **Primarily Math** is an 18-hour program leading to a K-3 Math Specialist Certificate.
- **Nebraska Algebra** is a one-year, 9 credit hour program for Algebra I teachers.
- **New Teacher Network** supports new secondary math teachers, helping them earn up to 24 credit hours tuition free.
- **Robert Noyce Master Teaching Fellowships** provide substantial salary supplements to extraordinary math teachers who commit to teaching in a high-need Nebraska school for five years and becoming a leader in mathematics education in their schools and districts.

Know someone who is considering becoming a teacher? A fifth program is for STEM majors and professionals who are interested in becoming mathematics teachers:

- **Robert Noyce NSF Teaching Fellowships** provide outstanding support for a 14-month master’s program leading to certification as a secondary math teacher, followed by a four-year commitment to teach in a high-need school in Nebraska.

This year, you can apply online. While paper applications are already available, online applications will be accepted beginning Oct. 15, 2010. See [http://scimath.unl.edu](http://scimath.unl.edu) for more details.

Official announcement held for Robert Noyce grants

The National Science Foundation has awarded UNL two grants totaling more than $4 million to support improved mathematics and science education in Nebraska schools that need it most.

The grants are through NSF’s Robert Noyce Teacher Scholarship program, which aims to encourage talented science, technology, engineering and mathematics (STEM) majors and professionals to become K-12 mathematics and science teachers in high-need classrooms.

The scholarship program is named for Robert Noyce, who co-founded Intel and invented the integrated circuit, which sparked the personal computer revolution. Noyce cared deeply about the dwindling number of students heading into math and science careers.

Chancellor Harvey Perlman; Prem Paul, vice chancellor for research and economic development; Jim Lewis, who is directing the math grant; and Jon Pedersen, director of the science grant, spoke at the official announcement on Sept. 29.

The math grant also will fund an effort to keep 24 strong, master’s-degree-holding, K-12 teachers in high-need schools.

Read the full story by University Communications at: [http://newsroom.unl.edu/announce/todayatunl/75/739](http://newsroom.unl.edu/announce/todayatunl/75/739)
We are pleased to extend an invitation to you to join other teachers of mathematics for an evening of free food, fellowship and fun at a “Dinner and a Math Problem” event or at a regional “Math Teachers Circle.” Both events are designed to bring together teachers of mathematics (especially of grades 6-12) and mathematicians with the goal of discovering and sharing with students the excitement and richness of problem solving in deep yet accessible mathematical topics. Click on a Dinner and a Math Problem location listed below for more information and a poster. Please share with your colleagues.

**KEARNEY – MATH TEACHERS CIRCLE**
Coordinator: Pari Ford – fordpl@unk.edu
When: Oct. 12, 6 p.m.
Where: Holiday Inn Express

**LINCOLN – MATH TEACHERS CIRCLE**
Coordinator: Anne Schmidt – aschmid@lps.org
When: Oct. 14, 5:30-7:30 p.m. (RSVP by Oct. 8)
Where: Culler Middle School

**OMAHA - MATH TEACHERS CIRCLE**
Contact Susan Cooper at scooper4@math.unl.edu

**SCOTTSBLUFF - DINNER & A MATH PROBLEM**
Coordinator: Dan Schaben - dschaben@esu11.org
When: Oct. 18, 7 p.m.
Where: ESU#13, Rooms B/C
Topic: Creative Video Problems

**NORFOLK - DINNER & A MATH PROBLEM**
Coordinator: JaLena Slack – jslack@esu8.org
When: Oct. 20, 5:30-8 p.m. (RSVP by Oct. 12)
Where: Lifelong Learning Center, 801 E Benjamin Ave.
Topic: Habits of Mind problems

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**GRAND ISLAND - DINNER & A MATH PROBLEM**
Coordinators: Sue Graupner, Jerel Welker and Karey Killion
When: Oct. 26, 6-7:30 p.m. (RSVP by Oct. 20: sgraupn@lps.org)
Where: Grand Island Senior High school (room TBA)
Topic: Conway’s Rational Tangles

**FREMONT - DINNER & A MATH PROBLEM**
Coordinators: Linda Hayek, Lenny VerMaas
When: Nov. 11 (RSVP by Nov. 1 to: linda.hayek@me.com)
Where: ESU 2
Topic: Conway’s Rational Tangles

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**State testing in math beginning in 2011**

State mathematics tests (NeSA Math) for grades 3 through 8 and 11 will be administrated in the spring during the window of March 28 to May 6, 2011, with results being reported for all students. All the tests are aligned to the new Nebraska Mathematics Standards adopted in October 2009, which may be found at the following Web site: [http://www.education.ne.gov/math/index.html](http://www.education.ne.gov/math/index.html).

Each test will cover concepts in number sense, algebra, geometry, measurement, data analysis and probability. There will be approximately 45-60 questions for each grade level that will be taken over two sessions. The multiple choice tests can be given either online or using paper/pencil format. The format is determined in the fall by the school district. The use of calculators is not permitted. Using graph paper is considered an appropriate practice for all test takers who choose to use it with the mathematics tests. Scratch paper may be used by students to work the questions.

Also, the mathematics reference sheet will be released as part of the mathematics practice test on Oct. 18. This means the reference sheet may be used in hard copy form with both the paper/pencil and the online versions of the NeSA-M.

For more details regarding the statewide test see Assessment under the Nebraska Department of Education (NDE) at: [http://www.education.ne.gov/assessment/index.html](http://www.education.ne.gov/assessment/index.html).

- Deb Romanek, Director of Mathematics (NDE)
Highlight on Action Research

Roller Coasters and Mathematics: A Look into Project-Based Instruction

by Lori Pierce, M² Cohort 4

Abstract: In this action research study of a sixth grade mathematics classroom, I investigated how using project based instruction combined with collaborative learning influenced students’ attitudes and beliefs in learning mathematics.

I discovered that using a project-based approach to instruction helped the students see connections to math and the real world. They felt that math became something exciting instead of just lessons from a book. I also found that most students preferred to work in small groups because they had come to count on their peers for support. They felt that they were more comfortable asking their peers questions in a small-group setting than asking questions in a traditional classroom setting.

Through this project-based instruction, it also was found that classroom engagement increased when student interest was combined with a variety of challenging and authentic problem-solving tasks. Finally, this action research supports collaborative learning in the mathematics classroom because when children work together it leads to higher self-confidence and positive attitudes.

To read Lori’s full paper and other action research papers from the Math in the Middle Program, see http://scimath.unl.edu/MIM/ar.php

Resources

WWC releases fraction guide

Since its establishment by the U.S. Department of Education in 2002, the What Works Clearinghouse (WWC) has been a central and trusted source of scientific evidence for what works in education. Among their many products are user-friendly practice guides.

The WWC’s newest practice guide, Developing Effective Fractions Instruction for Kindergarten Through 8th Grade, presents five recommendations intended to help educators improve students’ understanding of fractions. They are:

**Recommendation 1.** Build on students’ informal understanding of sharing and proportionality to develop initial fraction concepts.

**Recommendation 2.** Help students recognize that fractions are numbers and that they expand the number system beyond whole numbers.

**Recommendation 3.** Help students understand why procedures for computations with fractions make sense.

**Recommendation 4.** Develop students’ conceptual understanding of strategies for solving ratio, rate and proportion problems before exposing them to cross-multiplication as a procedure to use to solve such problems.

**Recommendation 5.** Professional development programs should place a high priority on improving teachers’ understanding of fractions and how to teach them.

Each recommendation includes strategies to develop an understanding of fractions in young children, as well as strategies to help older children understand the meaning of fractions and the computations involved.

Jim Lewis, PI of NebraskaMATH and director of the Center for Science, Math & Computer Education, is a member of the panel that produced the guide.

The Project on Incentives (POINT) was a three-year study conducted in the Metropolitan Nashville School System from 2006-09, in which middle school mathematics teachers voluntarily participated in a controlled experiment to assess the effect of financial rewards for teachers whose students showed unusually large gains on standardized tests.

The experiment was intended to test the notion that rewarding teachers for improved test scores would cause scores to rise. It was up to participating teachers to decide what, if anything, they needed to do to raise student performance: participate in professional development, seek coaching, collaborate with other teachers, or simply reflect on their practices.

Ultimately, the study found no evidence that increasing incentives would constitute an effective intervention that improved student outcomes. The authors examined explanations for the lack of effect, citing strong survey evidence that teachers made little or no attempt to improve either because they believed they were already doing the best job they could or they did not know what else to try.

The study did not yield consistent and lasting gains in test scores; it simply did not do much of anything. It might have been productive to reward teachers in teams or to combine incentives with coaching and professional development. POINT shows that it is insufficient to tie teacher compensation to test scores, then stand back and just wait for good things to happen.

The online nomination period for Secondary Mathematics and Science Teachers (7-12) opened Oct. 1. The application period will open on Nov. 1, and the completed packet must be submitted by May 1, 2011.

The eligibility requirements have been updated slightly:

- Must teach mathematics or science in grades 7-12 in a public or private school.
- Hold at least a bachelor’s degree from an accredited institution.
- Be a full-time employee of the school or school district as determined by state and district policies, and teach K-12 students at least 50 percent of the time.
- Have at least five years of full-time, K-12 mathematics or science teaching experience prior to the 2010-2011 academic school year.
- Teach in one of the 50 states or the four U.S. jurisdictions. The jurisdictions are Washington, D.C.; Puerto Rico; Department of Defense Schools; and the U.S. territories.
- Be a U.S. citizen or permanent resident.
- Not have received the PAEMST award at the national level in any prior competition or category.

To nominate a teacher, go to: https://www.paemst.org/controllers/nomination.cfc?method=nominate.

- Deb Romanek, Director of Mathematics (NDE)

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**Presidental advisors highlight STEM ed. plan**

A new report by the President’s Council of Advisors on Science and Technology (PCAST), “Prepare and Inspire: K-12 Education in Science, Technology, Engineering and Math (STEM) for America’s Future,” makes recommendations to better prepare America’s K-12 students in STEM subjects and inspire those students to challenge themselves with STEM classes, engage in STEM activities and consider pursuing careers in those fields.

Among the recommendations in the report are that the federal government should: recruit and train 100,000 STEM teachers over the next decade; recognize the top 5 percent of the nation’s STEM teachers by creating a master teachers corps; create 1,000 new STEM-focused schools over the next decade; use technology to drive innovation and create an advanced research projects agency for education; create opportunities for inspiration through individual and group experiences outside the classroom; and support the current state-led movement for shared standards in math and science.

PCAST, an advisory committee consisting of 20 of the nation’s leading scientists and engineers appointed by the President, made the recommendations primarily to the Department of Education and the National Science Foundation. Fully funding all of the recommendations could require investments of $1 billion per year.

To read the full report, visit: http://whitehouse.gov/ostp/pcast

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**MSRI site features UNL faculty**

The Web site for the Mathematical Sciences Research Institute showcases two publications on its home page, both featuring UNL faculty. Jim Lewis and Ruth Heaton organized the workshop series that produced the publication “Teaching Teachers Mathematics: Research, Ideas, Projects, Evaluation,” and “Collaborating to Teach Teachers: Mathematics and Educators Team Up” also highlights TLTE and CSMCE faculty and UNL’s math-math education partnerships. Take a look at them at: http://www.msri.org.