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## NebraskaMATH October 2009 Newsletter

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**October 2009**

## **Progress Report on the Revised Nebraska Mathematics Standards**

In response to recent legislation requiring a state-wide assessment in mathematics, the Nebraska Department of Education initiated a revision of Nebraska's Mathematics Standards. The revision of the standards is now close to completion as the latest draft was approved by the State Board of Education on October 8, 2009. The document is now headed for the state Legislature and the state attorney general's office for further review. Patience Fisher, a faculty member in the Department of Teaching, Learning and Teacher Education at UNL, participated in the revision process and offers the following summary.

The process of revising the Nebraska Mathematics Standards began in April, 2007, with the selection and meeting of a "Standards Advisory Team". This team consists of NDE staff, ESU and district leaders in mathematics education (including K-12 teachers), and Mathematics and Mathematics Education faculty members from institutions of higher learning throughout Nebraska.

The charge for this group was to develop an overarching plan for writing standards which met specific criteria. The standards need to

- ✱ Focus on students before content;
- ✱ Be broad, deep and few in number, and representative of the most essential concepts;
- ✱ Reflect on-going research and best practice;
- ✱ Reflect knowledge and skills relevant to citizens of the 21st century.

The plan developed at this meeting called for a focus on four content standards: Number Sense; Geometry and Measurement; Algebra; and Data Analysis and Probability.

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## **Joint Meeting of Nebraska's Education Leaders**

On September 24, the Center for Science, Mathematics and Computer Education (CSMCE) held a joint meeting with Staff Development Officers from Nebraska's Educational Service Units, the Nebraska Department of Education (NDE), and university personnel. The meeting was held to discuss ways through which these organizations might partner resources in order to more effectively assist math and science teachers in all of Nebraska's school districts.

The meeting began with reports of current professional development activities supported by each organization. The reports were followed by a discussion led by Matt Blomstedt, Executive Director of the ESU Coordinating Council, where math and science staff from ESUs articulated the specific professional development needs of their teachers. The meeting ended with a session devoted to exploration of solutions to these needs, and how the CSMCE, the NDE and ESUs might work together to meet them.

## **Nebraska Algebra to Accept Applications**

We will be accepting applications for the second cohort of Nebraska Algebra teachers beginning October 15. Courses for Nebraska Algebra Cohort 2 will be offered in Grand Island as part of an effort to better support teachers from central and western Nebraska. For application materials and information about the program visit:

<http://scimath.unl.edu/nebraskamath/teacherapplication.php>

## Nebraska Summit on Mathematics Education

Monday, December 14, 2009  
Embassy Suites Hotel & Convention Center  
Lincoln, Nebraska

The Nebraska Summit on Mathematics Education will offer Nebraska education and policy leaders the opportunity to take stock of the state's strengths in the area of mathematics education and to identify and begin working together on the major challenges we face.

The featured keynote speakers who have accepted invitations to attend the summit are Nebraska Governor Dave Heineman, Nebraska University President J.B. Miliken, and Commissioner of Education Dr. Roger Breed.

Along with other topics relevant to mathematics education, the Summit will include discussions of:

- \* the challenges faced by mathematics teachers and administrators resulting from the need to make "adequate yearly progress" in light of the revision of Nebraska's math standards and the implementation of a statewide mathematics assessment;
- \* the collaboration of education leaders, government officials and business leaders as part of Nebraska's P-16 Initiative;
- \* the very prominent and fast moving initiative by the National Governors' Association and the Council of Chief State School Officers to develop a set of Common Core State Standards.

The audience for the Nebraska Summit includes business, education and policy leaders, university faculty including mathematicians and mathematics educators, K-12 mathematics teachers and others who are concerned with improving mathematics teaching and learning in Nebraska.

Watch for more details in future newsletters or visit the Summit Web site at <http://scimath.unl.edu/csmce/summit.php>

*Major funding for the Nebraska Summit on Mathematics Education is provided by the National Science Foundation through the Math in the Middle and NebraskaMATH grants to the University of Nebraska-Lincoln.*

## Math Challenge Corner



### Anyone up for a Game of Suuji wa Dokushin ni Kagiru?

Featuring the work of  
Marlene Grayer, M<sup>2</sup> Cohort 4

Sudoku, a game which has engaged the minds of millions of Americans in recent years, was originally given the name Suuji wa Dokushin ni Kagiru by its creator Maki Kaji, president of the Japanese puzzle company, Nikoli. The original name literally means "the numbers must be single", a name which is fitting (as those familiar with the game will confirm), but a name far less palatable than its shortened version: Sudoku.

For those readers who are unfamiliar with the game, a Sudoku puzzle consists of a 9 x 9 grid that is broken down into nine 3 x 3 sub-grids. The goal of the game is for the player to place the numbers 1 through 9 in each sub-grid without repeating any of the digits in any row or column of the full grid. A few numbers are already filled in to help a player get started.

		1				8	9	
	2	7			9		5	
		4		8	2			
	6		9	2		1	4	
				5				
9	8		6	1			3	
			2	1		4		
1		7				3	6	
7	9					2		

While many are familiar with the game itself, we suspect a much smaller audience is capable of answering the following questions:

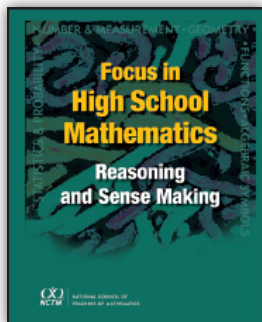
- \* What two games, one attributed to mathematician Leonard Euler, the other to American architect Howard Garns, inspired Maki Kaji's creation of Sudoku?
- \* What was the first newspaper to publish Sudoku, turning it into an international craze?
- \* How many different arrangements of the digits 1 through 9 in a Sudoku grid are possible?
- \* Do all Sudoku puzzles have a unique solution?
- \* What are some successful strategies for playing Sudoku?

For the answers to these and other questions, check out Marlene Grayer's paper *Sudoku: A Plan for a Successful End* at <http://scimath.unl.edu/MIM/ar.php>



## Resources

### NCTM Releases Focus in High School Mathematics: Reasoning & Sense Making



NCTM released the highly anticipated *Focus on High School Mathematics: Reasoning and Sense Making*, on October 6th. This publication is a valuable resource designed to help teachers incorporate the themes of reasoning and sense making into their mathematics classroom. Building on NCTM's, Principles and Standards for School Mathematics and on the interest generated in their 2006 publication, Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics, this resource explains what reasoning and sense making look like in a mathematics classroom, and provides a framework for promoting reasoning and sense making in core content areas and across the mathematics curriculum.

This shift in focus is not a minor change, but a significant rethinking of the high school math curriculum.

"Reasoning and sense making are at the heart of mathematics from early childhood through adulthood," states NCTM President Henry (Hank) Kepner. "A high school mathematics curriculum based on reasoning and sense making will prepare students for higher learning, career success, and productive citizenship."

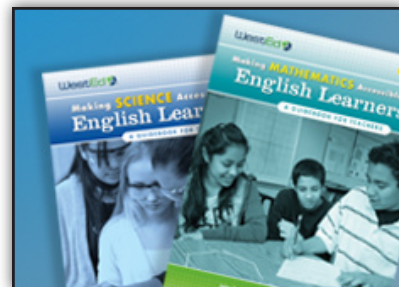
More information about this publication, along with sample pages and an executive summary are available at <http://www.nctm.org/standards/content.aspx?id=23749>. Purchases can be processed at NCTM's Online Catalog <http://www.nctm.org/catalog/product.aspx?id=13494>.

### Help for Reaching English Language Learners

WestEd, is a non-profit agency based in California, which works at local, state, and federal levels, to develop research-based educational programs, intervention strategies, and other resources, including publications and services. In September 2009, WestEd released the resource *Effectively Reach English Language Learners*. This resource includes teachers' guides and accompanying professional development guides for helping upper elementary, middle, and high school math and science teachers effectively reach English language learners. Sample chapters of these guides can be downloaded free of charge by visiting

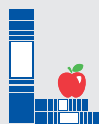
<http://www.wested.org/cs/we/view/rs/945>

For more information about other resources and the WestEd organization, visit [www.wested.org](http://www.wested.org).



I advise my students to listen carefully the moment they decide to take no more mathematics courses. They might be able to hear the sound of closing doors.

—James Caballero





From Page 1. . .

In addition five process standards were to be woven throughout the content standards: Communication; Multiple Representations; Problem Solving; Connections; and Reasoning.

A smaller group of individuals was selected to begin the task of writing the standards. This group, made up of K-12 mathematics teachers, higher education faculty members, and other leaders in mathematics education from across the state, met frequently to work on this task and report on their progress to the advisory group. The groups used various resources to develop the grade level standards, including the current Nebraska Standards, the NCTM's Principles and Standards for School Mathematics and Focal Points, the National Mathematics Panel's Report, the ACHIEVE benchmarks for elementary grades, ACHIEVE objectives for high school mathematics courses, standards documents from other states, as well as information related to the College Board expectations and the ACT mathematics examination.

The writing team was directed to develop curricular indicators for each of the content standards for grades K-8 and for high school. These indicators needed to be measurable and have a high degree of rigor for each grade level. In addition, curricular indicators could not be repeated at different grade levels as concepts listed are expected to be mastered at that grade level.

Input from various small groups was solicited. These groups included district and ESU administrators, experts in early childhood education, and secondary mathematics content specialists. A copy of the working draft was posted on the NDE Web site in March 2009 inviting feedback from interested parties. All of this input was considered by the writing team and changes were made based on these comments.

The document was sent out for review by outside experts during the summer of 2009. McCREL reviewed the Nebraska standards comparing them against a

number of state standards documents considered to be of high quality and to the NCTM Focal Points. Robert J. Marzano's New Taxonomy of Educational Objectives were also used to evaluate the standards. Reviewers at ACHIEVE compared the high school standards to an early draft of the *College and Career Readiness Standards for Mathematics*.

They also met to compare the new high school standards with the version of the College and Career Readiness Standards that were released in September 2009. Final revisions were made with members of the State Board of Education after all external reviews were completed.

A copy of the latest draft of the revised standards can be found on the NDE Web site, [www.nde.state.ne.us](http://www.nde.state.ne.us). These are available in two formats: a horizontal format showing expectations for each standard across grade levels; and a vertical format showing the expectations by grade level.

## Common Core Standards Open to Public Review

Although next month's newsletter will feature information about the Common Core Initiative, we wanted to bring this to your immediate attention as the *College and Career Readiness Standards* are currently available for public review. These standards are being developed as part of the Common Core Initiative under the direction of the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO). We wanted to alert you to the fact that these standards are currently public and open for review.

As these standards are very likely to have an impact on mathematics education across the entire nation, we strongly encourage you to view and comment on the standards by visiting [www.corestandards.org](http://www.corestandards.org).

Don't delay, as the public comment period ends October 21.



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