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Regional Math and Science Center
Grand Valley State University
328 Henry Hall
1 Campus Drive
Allendale MI 49401

Mathematics in Action

"Making Connections"

a conference for K-12 mathematics educators

Thursday, February 23, 2006

Math in Action

The Eberhard Center
The Robert C. Pew Campus
in downtown Grand Rapids
Grand Valley State University
Thursday, February 23, 2006
8:40 am - 3:00 pm

Math in Action

GRAND VALLEY STATE UNIVERSITY

www.gvsu.edu/math/MathInAction

Math in Action is funded in part by: GVSU College of Liberal Arts and Sciences, Michigan Council of Teachers of Mathematics, and the Regional Math & Science Center (GVSU).

Math in Action 2006 Program

Session A: 8:40 - 9:40 am

A1 Algebra & Geometry: Making the Manipulative Connection
Kevin Dykema, Mattawan Middle School
Participants will discover how area models can be developed to investigate fundamental algebraic concepts. Topics include perimeter, area, volume, polynomial expressions, and more. *Grades 6 - 12*

A2 TesselFestival!
Gina Garza-Kling, Western Michigan University
Learn how to incorporate several aspects of tessellations into a hands-on "TesselFestival." In one hour, students will work with tessellations with regular polygons, computer-generated tessellations, the work of M.C. Escher and more! *Grades 3 – 12*

A3 The Mathematics of Voting and Elections
Jonathon Hodge, GVSU Mathematics
Come see how mathematics can be used to study voting and elections, and how voting theory can be used to develop mathematical reasoning and problem solving skills. This session will focus on voting systems, social choice, and Arrow's theorem. *Grades 9 – 12*

A4 Children Left Behind
Cindy Groenink, GVSU Mathematics
Results and practical materials from a research project on how to work with the students who score the lowest on standardized tests. *Grades 3 – 5*

A5 Tinkerplots: Data Exploration in Grades 4-8
David Kapolka, Key Curriculum Press
Using computer software designed specifically for the younger student, we will explore data involving math, science, social studies, health, and more. *Grades 4 – 8*

A6 A Motivating Context to Explore Functions
Esther Billings and Charlene Beckmann, GVSU Mathematics
We will describe how we have used children's picture books to explore linear and exponential functions with prospective teachers and middle grades students. Classroom ready handouts available. *Grades 6 – 8*

A7 Get Your Game On! Math Activities For Your Classroom*
Leisa Lobbezoo, Bursley Elementary School
Kelli Gunn, Rosewood Elementary School
Practical, easy ideas designed to help students daily reinforce GLCE's. Walk away with lots of fun math games and activities easily adaptable to different concepts for your grade level. *Grades 3 – 8*

A8 Boxplots, Boxplots, Boxplots
Mary Richardson and Paul Stephenson, GVSU Statistics
Speakers will provide participants with numerous examples of using boxplots to describe datasets (including a "living" boxplot). *Grades 7 - 12*

A9 Making the Connection Between Art, Mathematics, and Technology
Christy Schultz, Valleywood Middle School
Cindy Schoonbeck, Crestwood Middle School
Do you have the student that freezes up on test day? They know the material, but just can't get their response on paper? By connecting your math standards with something more hands on, artistic, and project based you will reach more students and keep them interested in your class. It is time to start offering more than one type of assessment. Come join us. *Grades 6– 8*

Session B: 9:50 - 10:50 am

B1 Let's Improve Measurement with Meaningful Activities!
Barb Leapard, Eastern Michigan University
Convinced that there must be a better way to approach teaching measurement? This session explores hands-on ways to make those all-important connections in measurement. *Grades 3 - 8*

B2 Do Dogs Know Calculus?
Timothy Pennings, Hope College
Elvis Bogaart Wales Pennings, Welsh Corgi
Does Elvis, my Welsh Corgi, find the optimal (quickest) path to balls that I throw in Lake Michigan? What does the answer, gained from solving a standard calculus problem, reveal about Nature? We also provide an experimental worksheet that students can use to detemine if they can find optimal paths. Elvis will be available for demonstration and follow-up questions. *Grades 9 - 12*

B3 The Mathematics of Voting and Elections
Jonathon Hodge, GVSU Mathematics
Come see how mathematics can be used to study voting and elections, and how voting theory can be used to develop mathematical reasoning and problem solving skills. This session will focus on weighted voting systems and power indices. *Grades 9 – 12*

B4 NASA and Middle School Math Connections
Tara Maynard, Creekside Middle School
There are many FREE NASA materials that can be used in the classroom. We'll look at various math topics and activities that connect the mathematics to different NASA areas. *Grades 5 – 9*

B5 Using Tabletop Sports Games to Teach Probability Concepts
John Gabrosek, Mary Richardson, and Paul Stephenson, GVSU Statistics
Participants will play various tabletop sports games, such as Strat-O-Matic, and discuss their use as an aid to teaching basic and advanced probability concepts. *Grades 9 – 12*

B6 Doing Math: What's Reading Got to Do With It?
Kathryn Coffey, Fruitport Community Schools
David Coffey and John Golden, GVSU Mathematics
Reading and mathematics have more in common than story problems and literature with a mathematical bent. We will look at connections between reading comprehension strategies and the NCTM process standards. *Grades PreK - 8*

B7 Mini Movies and Math Karaoke using Powerpoint and Excel
Roger Patrick, Grand Rapids Public GRAPCEP High School
Come sing the Quadratic Fight Song and use the uncooperative typewriter and see how Powerpoint and Excel can effectively be used to enhance math education. *Grades 7 – 12*

B8 Using Manipulatives to Meet the Needs of ALL Learners
Amy Hage and Rhonda Johnson, Bursley Elementary School
In this session we will show teachers how to use math manipulatives in order to better meet the needs of all children. We will talk about how to plan for these lessons, organize materials, and adapt lessons for children who are struggling or for those who need an extension. *Grades K - 2*

B9 A Teacher Goes to Washington
David Kapolka, Key Curriculum Press
Learn about two exciting programs for teachers, the Presidential Awards Program and the Einstein Fellowship. All teachers K-12 are eligible. *Grades K – 12*

B10 Get Your Game On! Math Activities For Your Classroom*
Leisa Lobbezoo, Bursley Elementary School
Kelli Gunn, Rosewood Elementary School
Practical, easy ideas designed to help students daily reinforce GLCE's. Walk away with lots of fun math games and activities easily adaptable to different concepts for your grade level. *Grades 3 – 8*

General Session: 11:00 am - 12:00 pm

Drs. David and Phyllis Whitin, Professors of Elementary Education, Wayne State University

Literature²: The Power of Math-Related Books
Sharing good pieces of literature with all students can increase their mathematical understanding. The presenters will discuss a range of high-quality books and show how teachers have used them effectively with their students.

Session C: 12:50 - 1:50 pm

C1 Explorations and Activities in Art and Mathematics
Paul Yu, GVSU Mathematics
This double session will explore a variety of art activities that may be used to explore mathematical concepts, cross reference with the GLCEs, and discuss ways to implement these activities in your classroom. (Participants must attend BOTH C1 and D1.) *Grades 6 – 8*

C2 The Power of Story - Bringing Out the "Child" in Your Middle School Math Student
Lindsay Noakes, Battle Creek Math and Science Center
Increase understanding of mathematical concepts, motivate students, and provide a real-world context for learning mathematics all through the use of children's literature. Books and lessons will be shared. *Grades 6 – 8*

C3 Integrating Literature and Mathematics
Carolyn Hannum, Concordia University
Integrating literature into your mathematics lessons enhances both literacy and numeracy skills within your classroom. Students can experience the wonder of problem solving within the imaginative context of literature. *Grades PreK - 5*

C4 Creating Assessments That Align with the GLCE's
Michigan Mathematics Leadership Academy Task Force
LuAnn Murray, Genesee Intermediate School District
Laurie Tomczyk, Mecosta Osceola Intermediate School District
Criteria to evaluate written assessments and tips in authoring and editing assessments will be presented. Participants will have the opportunity to write and jury items that align with the GLCEs. *Grades K – 8*

Session C (continued): 12:50 - 1:50 pm

C5 Connecting Mathematics and Religious Studies: Teaching the Math of the 'Bible Codes' Controversy in a Jewish Day High School
Michael Weiss, University of Michigan
I describe how the controversy over alleged "codes" in the Hebrew Bible afforded an opportunity to connect mathematics and Jewish studies for my statistics students in a Jewish day school. *Grades 9 – 12*

C6 Similarity - A Lesson Study in Action
Colleen Heyboer, Grand Rapids Public Schools
Pam Wells, GVSU Mathematics
This talk will be about a lesson study that was completed in a 7th grade math classroom. Students learned about similarity in an engaging and meaningful way. Lessons and teaching strategies will be discussed. *Grades 6 – 8*

C7 Predictions and Correlations for Sports Nuts
Phyllis Curtiss and John Gabrosek, GVSU Statistics
Data sets from a variety of sports are used to investigate relationships. We illustrate the uses of scatterplots, correlation coefficients, and regression lines to better understand relationships and make predictions.
Grades 7 – 12

C8 The Power of Teaching for Problem Solving
Brian Gamm, Stocking Elementary School
Ena St. Germain, Burton Elementary School
John Golden, GVSU Mathematics
The new Grand Rapids Instructional Model for mathematics is strongly focused on problem solving. The session will cover the model, sample lessons, and how we are implementing it. *Grades K – 5*

C9 Exploring Discrete Mathematics - Some Big Ideas From Counting With Frogs
Mary DeYoung, Hope College
Pathways, networks and different counting challenges can help students to develop their reasoning skills through exploring problems. These topics in discrete mathematics provide a foundation for learning probability.
Grades 3 – 5

Session D: 2:00 - 3:00 pm

D1 Explorations and Activities in Art and Mathematics
Paul Yu, GVSU Mathematics
This double session will explore a variety of art activities that may be used to explore mathematical concepts, cross reference with the GLCEs, and discuss ways to implement these activities in your classroom. (Participants MUST attend both C1 and D1.) *Grades 6 – 8*

D2 KC4 Mathematics - Curriculum Revisions that Align with the GLCEs
Ruth Moxon, Kent Intermediate School District
KC4 Mathematics has been revised to align with the Michigan GLCEs. This session will introduce a sample standard that includes vocabulary, lessons and suggested instructional strategies, plus aligned assessments.
Grades K - 8

D3 Coins to Combinations: A Short Course in Probability
Rhonda Pardue and Nathan Meyer, Black River Public School
A set of probability lessons taken from a variety of sources that can be used as a mini course or as individual class lessons. Something for everyone in grades 6-12. *Grades 6 - 12*

D4 Scaling the Universe with Mathematics
Mary Garrett, NASA Education and Public Outreach
NASA activities help students develop an intuitive understanding of large and small numbers and show students how the NASA Missions are related to mathematical knowledge. Materials are free to educators.
Grades 6 – 12

D5 Using Tiles and Games to Teach Math in Grades 6-8
Lonnie Bellman, CPM Educational Program
Participants will be actively engaged in using manipulatives, playing games and doing activities to enhance the learning of math concepts.
Grades 6 – 8

D6 Workshop in Spherical Geometry
William Dickinson, GVSU Mathematics
Most instructors are familiar with lines, line segments, rays, angles, and triangles in Euclidean geometry. What happens when you move them into spherical geometry? Using a tennis ball and string we will explore these ideas. Come prepared to work through many old ideas in a new way.
Grades 6 – 12

D7 ThEMaT: Thought Experiments in Mathematics Teaching
Patricio Herbst, Michael Weiss, Talli Nachlielli, and Jeong-Lim Chae
University of Michigan
Animated geometry classroom episodes are used to foster conversations among researchers and teachers that explore the kinds of mathematical activity that is feasible for teachers to sustain in their classrooms.
Grades 9 – 12

D8 Generating Periodic Assessments From the MMLA Web Site Data Bank
Michigan Mathematics Leadership Academy Task Force
LuAnn Murray, Genesee Intermediate School District
Laurie Tomczyk, Mecosta Osceola Intermediate School District
Participants will be involved with a demonstration of the Michigan Mathematics Leaderships Academy's GLCEs assessment web source and how tests can be generated using the site. *Grades K – 8*

D9 Using and Assessing Constructed Response Items in the Classroom
Garry Johns, Saginaw Valley State University
Participants will see how to develop and assess math activities that require writing. The topics are appropriate for all grades; however, the examples will come mainly from grades 3 - 8. *Grades 3 – 8*

Mathematics in Action Registration Form

(One registration per form...duplicate as needed - this form is also available at www.gvsu.edu/math/MathInAction)

Name	**Last 4 digits of Social Security Number**
Address	**City** **Zip**
Daytime Phone ( )	**Email address**

Name of School	**School District**	**Grades Teaching Now**

Gender	**Ethnicity**
Male ___ **Female** ___	**African-Am** ___ **Asian-Am** ___ **Caucasian** ___ **Hispanic** ___ **Native-Am** ___ **Other** _____

Participant Category (please select one choice from the two rows of boxes below)

Teacher ☐	**Student** ☐	**Administrator** ☐ **(your title)** _____	**School Board** ☐	**Parent** ☐
Community Member ☐	**Business/Industry** ☐	**Legislator** ☐	**Other (specify)** _____	

Confirmations will be emailed.

NOTE: Sessions offered more than once are marked with an *.

(Place appropriate session code in blank)

Session A:
_____ 1st Choice
_____ 2nd Choice

Session B:
_____ 1st Choice
_____ 2nd Choice

Session C:
_____ 1st Choice
_____ 2nd Choice

Session D:
_____ 1st Choice
_____ 2nd Choice

Ask your school if professional development funds are available.

I would like to participate in "**My Favorite Lesson**":
☐ Yes ☐ No

Enclose your registration fee of
$27.00 per teacher/educator
$11.00 per preservice teacher
(make checks payable to GVSU) and mail
this completed registration form postmarked
by **February 9, 2006** to:

RMSC - MIA
328 Henry Hall
Grand Valley State University
1 Campus Drive
Allendale, MI 49401

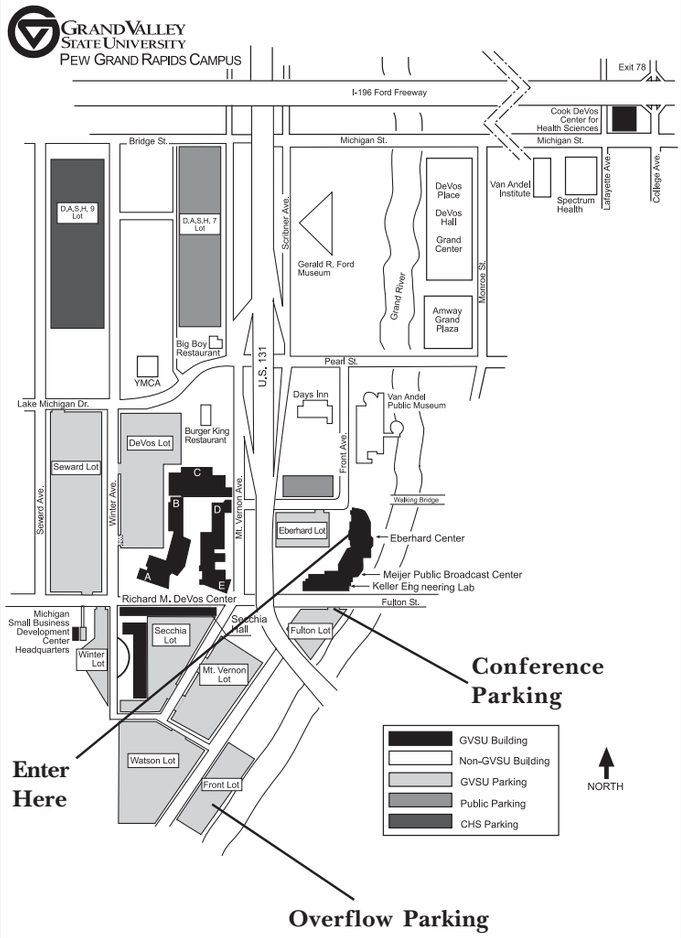
Math in Action
Schedule

8:00 - 8:40 am	Registration and Refreshments 2nd Floor lobby, Eberhard Center
8:40 - 9:40 am	Concurrent Session A Conference Facilities, Eberhard Center
9:50 - 10:50 am	Concurrent Session B Conference Facilities, Eberhard Center
11:00 am - 12:00 pm	General Session Auditorium, Eberhard Center
12:00 - 12:40 pm	Lunch 2nd Floor Lobby, Eberhard Center

During the lunch break, there will be an event called "**My Favorite Lesson**," where teachers share with others a lesson they have effectively used in a class. This could be as simple as displaying some handouts for other particpants to peruse. We would like to invite you to particpate by checking the box on the registration form. Once we learn of your interest, we will contact you to coordinate the display of your materials.

12:50 - 1:50 pm	Concurrent Session C Conference Facilities, Eberhard Center
2:00 - 3:00 pm	Concurrent Session D Conference Facilities, Eberhard Center

GVSU MAP



From US-131 Northbound: Take the Pearl St. Exit, #85B. Turn left (west) onto Pearl Street (which becomes Lake Michigan Drive). Go two blocks; turn left on Winter Ave. Take Winter south to light at Fulton St. Turn left on Fulton, follow roughly two blocks under US-131 and enter the Fulton Lot on your right.

From US-131 Southbound: Take the Pearl St. Exit, #85B. Turn right (west) onto Pearl Street (which becomes Lake Michigan Drive). Go one block; turn left at first intersection on Winter Ave. Take Winter south to light at Fulton St. Turn left on Fulton, follow roughly two blocks under US-131 and enter the Fulton Lot on your right.

From I-196 East/West: Take the Ottawa Ave/Downtown Exit, #77. Follow Ottawa Ave. through downtown til it dead-ends into Fulton St. Turn right onto Fulton. Proceed roughly three blocks across the river til just before the US 131 overpass. Turn left into the Fulton Lot marked Conference Parking.

Overflow parking is available in the Front Lot noted on the map above.

January 3, 2006

Dear Educator,

You are cordially invited to attend this year's Math In Action Conference, hosted by Grand Valley State University, on Thursday, February 23, 2006. The theme of this year's conference is "Making Connections," as this describes our hopes for the conference so well. For instance, as educators, we continually strive to connect mathematics to the larger world to emphasize the fundamental nature of our subject and to make mathematics more relevant for our students. In addition, in these days of high-stakes testing, it is increasingly necessary for educators to connect mathematical content with the Grade Level Content Expectations (GLCEs). You will see these themes running throughout the program. Most importantly, we hope that our conference brings educators with diverse experiences together in an environment in which new ideas can be shared and explored.

We are excited to welcome David and Phyllis Whitin, professors of elementary education at Wayne State University, as our keynote speakers. David and Phyllis will be sharing with us some of their experiences in using children's literature in the teaching and learning of mathematics. Besides the keynote address, there are four concurrent sessions that run throughout the day. Each session will be composed of about nine presentations in which educators describe activities they have created or experiences they have had that are of interest to a wide audience of educators. In particular, many of these presentations will encourage participants to explore the ideas interactively and will leave the participants with activities that may be easily adapted for use in the classroom.

Besides directions to the conference site, this brochure contains a detailed schedule of presentations and a registration form. Please note that the deadline for registration is February 9, 2006. We would also appreciate you sharing this brochure with your colleagues who may have an interest in attending. Additional brochures can be found online at http://www.gvsu.edu/math/MathInAction. Your questions and comments will be welcomed by the co-chairs, who may be reached at the addresses given below.

Sincerely,

David Austin
Co-chair, Math in Action
austind@gvsu.edu

Steve Blair
Co-chair, Math in Action
blairst@gvsu.edu