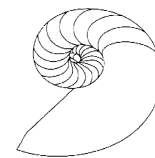


2004 Washington State Community College Mathematics Conference



Thursday

4:00-7:30	Registration	Lobby
7:30-8:30	Opening Remarks and Invited Speaker Dr. Ed Seymore	Room C
8:30-10:30	Social (Hosted by Brooks/Cole)	Room C

Friday

7:30-8:30	Breakfast	Room C
7:30 -	Registration	Lobby
8:00 – 6:00	Exhibitor Displays Open	Lobby

Room B will be available as a lounge/discussion room throughout the conference

Time/Room	A	100	200	300	400	500/600
Session 1 8:45-9:45	Bev Parnell <i>Hands-On Modeling and Learning in Algebra Classes (continued session 2)</i>	Vauhn Foster-Grahler & Janet Ray <i>Quantitative Literacy. What is it? QL101</i>	Edoh Amiran <i>Assessment at the Class Level - an Example</i>	Will Webber <i>Colorful Complex Numbers</i>	Helen Burn <i>Conceptualizing Mathematical Proficiency</i>	Sreedharani Nandagopal <i>Mathematics As Art Through The Eyes Of An Ancient Culture.</i>

9:45-10:15 Hot Beverage Break and Snack Lobby

Session 2 10:15-11:15	Bev Parnell <i>(continued) Hands-On Modeling and Learning in Algebra Classes</i>	Various <i>Math Across the Curriculum Poster Presentation</i>	Doug Mooers <i>Are Core Topics for Intermediate Algebra Needed in WA?</i>	Paul Riopel <i>Meet the TI-84 Plus Family and Apps</i>	Yves Nievergelt <i>Integration Techniques Matter: How (Not) to Integrate and Applications</i>	Sreedharani Nandagopal <i>Mathematics As Art Through The Eyes Of An Ancient Culture.</i>
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11:30-1:00 Lunch Room C

12:15-1:00 WAMATYC Meeting Room C

Time/Room	A	100	200	300	400	500/600
Session 3 1:15-2:15	Mike Daniel <i>Technology in the classroom--denominate number operations.</i>	Vauhn Foster-Grahler & Janet Ray <i>Quantitative Literacy Across the Curriculum Q&A and Discussion</i>	Tom Phelps <i>Economics for Math Teachers</i>	Alison Richards <i>Mathematical Applications</i>	Lars Neises <i>Do Two Wrongs Make A Right?</i>	Kimberly Vincent <i>Practice Teaching in a Rural Community</i>

Friday (continued)

Time/Room	A	100	200	300	400	500/600
Session 4 2:30-3:00	Gail Nord <i>Taxicab Geometry</i>	Sears Taylor <i>Socratic Analysis and Graphic Organization</i>	Ginger Warfield & Jim Kelly <i>Developmental Mathematics around Seattle</i>	Jerry Wright <i>Project-Based Business Mathematics</i>	Louise Hoover <i>Math Humor</i>	Cen-Tsong Lin <i>Algorithms for Computing the Maximum Length of Runs in n Bernoulli Trials</i>
3:00-3:30	Cold Beverage Break and Snack					Lobby
Session 5 3:30-4:30	Will Webber <i>The On-line Graphing Calculator</i>	Branko Curgus <i>Cosh: The Extraordinary</i>	Mike Kenyon <i>Reading, 'Riting, and 'Rithmetic</i>	Alison Richards <i>Simulation Modeling</i>	Linda Cave & Michael Naylor <i>Fraction Misconceptions in Prospective Elementary Ed Students</i>	Sasha Malinsky <i>Fun With The Sun</i>

Friday Evening

6:00-6:30	No Host Social	Room C
6:30-7:30	Banquet	Room C
7:30-8:30	Keynote Speaker - Dr. LaJoyce Debro	Room C
8:30-10:30	Games, Social, Snacks, and No-host Bar	Room C

Saturday

7:30-9:00	Breakfast	Room C
8:00-10:45	Exhibitor Displays Open	Lobby

Time/Room	A	100	200	300	400	500/600
Session 6 9:15-10:15	Douglas Lewis <i>The Fifth Dimension</i>	Will Webber <i>Colorful Complex Numbers</i>	Christie Gilliland, Alice Kaseberg, Phil Mahler <i>AMATYC Crossroads Revisited Project</i>	Richard Plagge & Olga Shatunova <i>Solving inequalities</i>	Paul Meier <i>ID Numbers and Check Digits</i>	Alison Richards <i>Mathematical Applications</i>
10:15-10:45	Beverage Break and Snack					Lobby
Session 7 10:45-11:15	Douglas Lewis <i>Math Jeopardy Made Easy</i>	Michael Round <i>The Solar System in the Palm of Our Hands</i>	Katie Stables <i>Interpreting Mathematical Expressions</i>	Richard Plagge & Olga Shatunova <i>Solving absolute value inequalities</i>	Valerie Morgan-Krick & Ed Zimmerman <i>Math for people who could kill people if they can't do the math</i>	Jerry Wright <i>Project-Based Business Mathematics</i>
11:15-12:00	Checkout, Box Lunch, and Departure (hotel checkout time is noon)					Lobby

Session 1, Friday Morning, 8:45-9:45

Hands-On Modeling and Learning in Algebra Classes

Beverly J. Parnell, Yakima Valley Community College

Room A

This workshop will utilize easily produced items and activities designed primarily for concept development and problem solving. They can be used as short, collaborative classroom introductions or problem solving tools. Topics include maximum/minimum applications, transformations, circles, inequalities, polynomial multiplication, and linear and quadratic functions. A folder of "Monday morning" materials will be distributed. Also, bring your grapher! This presentation is two hours, continued in session 2.

Quantitative Literacy. What is it? QL101

Vauhn Foster-Grahler and Janet Ray, The Evergreen State College

Room 100

Quantitative Literacy is a way of thinking and reasoning that cuts across all disciplines. It is the historian analyzing a document for authenticity and the police officer evaluating the effectiveness of a crime prevention program. It is the menopausal woman deciding whether or not to use hormone replacement therapy and the administrator evaluating the cost/benefit of canceling a class. "Quantitative Literacy empowers people by giving them tools to think for themselves, to ask intelligent questions of experts, and to confront authority confidently. These are skills required to thrive in the modern world." (Lynn Arthur Steen. *Mathematics and Democracy, the case for Quantitative Literacy*. 2001.) Come and learn more.

Assessment at the Class Level - an Example

Edoh Y Amiran, Western Washington University

Room 200

An example of assessment is given, with descriptions of goals and levels of achievement, discussion of the motivation for these goals, and illustrations of the levels of achievement by specific questions and answers.

Colorful Complex numbers

William T. Webber, Whatcom Community College

Room 300

When we assign colors to complex numbers it is hard to tell if we should be in an art class or math class. The colors add a visual element that is not often presented with complex numbers. From basic arithmetic of complex numbers to finding roots of polynomial to the generation of fractals, color helps us visualize. We hope to both give the participants new insight into complex numbers and to dazzle them with images created.

Conceptualizing Mathematical Proficiency

Helen Burn, Highline Community College

Room 400

Is it possible to develop a framework for thinking about mathematical proficiency that might be applicable to a variety of our courses? This talk will explore whether a framework for mathematical proficiency developed in the context of K-8 mathematics education can be applied to postsecondary education.

Mathematics As Art Through The Eyes Of An Ancient Culture.

Sreedharani Nandagopal, Spokane Falls Community College

Room 500/600

The Tessellations of India are a mathematical treasure. This presentation will explore the meaning of these tessellations in Indian culture and their significance in "pattern-recognition." This session, which will include active learning, will be particularly useful for instructors of "Mathematics For Elementary Education", "Mathematics for Liberal Arts Majors" and anyone else who is interested in patterns and pattern building.

Session 2, Friday Morning, 10:15-11:15

Hands-On Modeling and Learning in Algebra Classes

Beverly J. Parnell, Yakima Valley Community College

Room A

The continuation of a two-hour presentation.

Math Across the Curriculum Poster Presentation

Participants of MAC and NNN

Room 100

Poster Presentations by participants of Math Across the Curriculum and National Numeracy Network.

Are Core Topics for Intermediate Algebra Needed in WA?

Doug Mooers, WAMATYC

Room 200

Washington State Community College students are required to successfully complete a Quantitative/Symbolic Reasoning course with an Intermediate Algebra prerequisite. The Inter-College Relations Commission (ICRC) references but fails to define Intermediate Algebra. While instructors of mathematics know Intermediate Algebra "when they see it", there is, at the present time, inconsistency in the content of the course.

WAMATYC is considering a position statement that would define CORE topics for Int. Alg. What do the teachers of math want to do?

Meet the TI-84 Plus Family and Apps

Paul Riopel, Texas Instruments

Room 300

Be among the first learn about the newest graphing calculator from Texas Instruments - the TI-84 Plus family. See how you can integrate Apps like Cabri Jr., Transformation Graphing, Inequality Graphing and more.

Integration Techniques Matter: How (Not) to Integrate and Applications

Yves Nievergelt, Eastern Washington University

Room 400

Some scientific applications of calculus involve integrals like those from calculus 2, which integral tables and mathematical software can fail to integrate adequately, which thus demonstrates the need for the most recondite techniques of integration. Real examples will range from calculus 2 (techniques of integration) through calculus 3 or 4 (arclength, area) and elementary ordinary differential equations (Newton's law).

Mathematics As Art Through The Eyes Of An Ancient Culture.

Sreedharani Nandagopal, Spokane Falls Community College

Room 500/600

An encore presentation. The Tessellations of India are a mathematical treasure. This presentation will explore the meaning of these tessellations in Indian culture and their significance in "pattern-recognition." This session, which will include active learning, will be particularly useful for instructors of "Mathematics For Elementary Education", "Mathematics for Liberal Arts Majors" and anyone else who is interested in patterns and pattern building.

Session 3, Friday Afternoon, 1:15-2:15

Technology in the classroom--denominate number operations.

Mike Daniel, Peninsula College

Room A

The Surveying-Geomatics program at Peninsula College has used the HP-48GX graphing calculator as the primary classroom hand-held technology for a number of years. Denominate number operations are an essential part of the program mathematics and the HP-48GX is an ideal instrument for these purposes. However, recent low availability of the HP-48 has necessitated a program change to another hand-held technology—the TI-89. This presentation examines basic denominate number operations using the TI-89 graphing calculator. Denominate number operations using units pre-programmed into the calculator will be demonstrated. Necessary units for specific program applications, not built into calculator memory, will be defined and stored in calculator memory in a manner that enables their use along with the existing units. Time permitting—development of simple routines such as the ‘Law of Cosines’ will be explored.

Quantitative Literacy Across the Curriculum Q&A and Discussion

Vauhn Foster-Grahler and Janet Ray, The Evergreen State College

Room 100

Time for people who are doing or would like to do Quantitative Literacy and/or Math Across the Curriculum to meet.

Economics for Math Teachers

Tom Phelps, Pierce College at Fort Steilacoom

Room 200

Shape of Revenue and Cost Curves (totals, averages, and marginals), marginal analysis, elasticities (four types), general information about market structures and the impact on competition, linear models such as Supply and Demand, Marginals, and more! If you teach Finite Math, Elements of Calculus, and want to know more, this may be for you!

Mathematical Applications

Alison Richards, Naval Undersea Warfare Center

Room 300

A brief look at applications of pre-calculus level mathematics to modeling and simulation in the Navy. The Naval Undersea Warfare Center, Newport, Rhode Island has the only torpedo hardware-in-the-loop simulator to model torpedoes and their underwater environment. The development, testing, and analysis of this facility entail a wide range of mathematical expertise. I will discuss examples from trigonometry, algebra, logarithms, and projectile equations, and how they can be applied to verifying target model sizes, safety boundaries, decibels, and air-launching of torpedoes.

Do Two Wrongs Make A Right?

Lars Neises, Spokane Falls Community College

Room 400

Interesting student errors in Arithmetic through Calculus. Often when graded papers are returned students complain that they got the "right answer" but they didn't get full points for the problem. This presentation is a collection of my favorite examples of student work wherein the student has made two (or more) mathematical errors yet they got the "correct answer".

Practice Teaching in a Rural Community

Kimberly Vincent, Washington State University

Room 500/600

This presentation will discuss how my secondary math methods students and I created a practice teaching experience using constructivist teaching infused with technology. The middle school and high school students came to WSU and the methods students wowed them with fun, informative mathematics activities and of course free lunch.

Session 4, Friday Afternoon, 2:30-3:00

Taxicab Geometry

Gail Nord, Gonzaga University

Room A

This non-Euclidean geometry will be discussed. I will motivate why this is a great geometry to explore to reinforce our Euclidean geometry that we see in high school and community college classrooms.

Socratic Analysis and Graphic Organization

Sears Taylor, Sequoia High School

Room 100

The Thinking Processes of the Theory of Constraints for Education are used to develop, organize, verify, and solve real-world applications ranging from literature to science. Examples are given where students not only solved the problem asked, but arrived at alternative (and better) solutions. These processes use graphic structures to guide the student's high-order thinking. When the student has completed a problem, the TOC graphics provide ample documentation for WASL-type tests.

Developmental Mathematics around Seattle

Ginger Warfield and Jim Kelly, University of Washington

Room 200

Since the beginning of time (well, 1973), Ginger has been teaching in and/or running the developmental mathematics program at the University of Washington. Since earlier this year, Jim Kelly has been teaching in that program and also exploring how Community Colleges around Seattle handle the same classes. They will antiphonally compare and contrast their views and findings and then answer questions (or try to).

Project-Based Business Mathematics

Jerry Wright, Seattle Central Community College

Room 300

Seattle Central Community College has changed their business math curriculum to more accurately reflect the business world. The content of each course focuses on real-world business projects. Through a 2-quarter sequence, students complete 5 projects:

1. Decide whether to foreclose or workout a loan (probability and expected value)
2. Explore various possible loan workouts (amortization)
3. Determine the price of a stock option (statistics, computer simulation, normal distribution)
4. Determine the quantity and price of a commodity which will maximize profit (differentiation, optimization, integration)
5. Find a bidding strategy that will generate a profit (computer simulation, probability distributions, game theory)

This presentation will outline the two courses.

Math Humor

Louise Hoover, Clark College

Room 400

I've been collecting jokes, cartoons, and one-liners about math for years. It seems time to share them with the rest of the mathematical community.

Algorithms for Computing the Maximum Length of Runs in n Bernoulli Trials

Cen-Tsong Lin, Central Washington University

Room 500/600

Two algorithms are introduced. The first algorithm considers the probability of union of events, it calculates the probabilities of all possible intersections of the events; the second algorithm uses recursive relation. The second method is easy and efficient in computation. The first method, although is more complicate in computation, but it identifies the one-to-one mapping between the binary representations of integers from 1 to $2^m - 1$ and the $(2^m - 1)$ possible intersections of sets chosen from m sets, the probability of each intersection is cunningly calculated by using a basis matrix and the binary representation of the integers.

Session 5, Friday Afternoon, 3:30-4:30

The On-line Graphing Calculator

William T. Webber, Whatcom Community College

Room A

Here is a resource that is available to anyone with an internet connection. The on-line graphing calculator can do any graph your hand held can do and more. Plot points, graph functions, polar functions, parametric functions, implicit functions, complex functions, contour plots, vector fields, animations, 2D and 3D, in color, and all at the same time. We will showcase this new resource with the hope that people might go home and use it.

Cosh: The Extraordinary

Branko Curgus, Western Washington University

Room 100

I shall report why, in the opinion of the calculus triumvirate, Cosh is an extraordinary function.

Reading, 'Riting, and 'Rithmetic

Mike Kenyon, Yakima Valley CC, Grandview Campus

Room 200

I co-taught a learning community this fall with an English instructor; we linked an Arithmetic class with a similar level of developmental English. I will discuss some of the techniques we used to link the two classes, the types of assignments we made, what worked (and what didn't), and some preliminary information about how our students have done in subsequent courses.

Simulation Modeling

Alison Richards, Naval Undersea Warfare Center

Room 300

The Weapon Analysis facility at Newport, Rhode Island is a facility that uses modeling and simulation to model the underwater environment, target models, and torpedo interaction with both. I will discuss at a high-level, the advanced mathematics that allow this to be accomplished. A small video is included which shows the modeling in action, with a simulated torpedo run. Topics will include environmental modeling, the development of target models, sonar, and an example of modeling and simulation in action.

Fraction Misconceptions in Prospective Elementary Ed Students

Linda Cave and Michael Naylor, Western Washington University

Room 400

A look at the resistant misconceptions embedded in preservice elementary education students and discussion of the role of post-secondary education.

Fun With The Sun

Sasha Malinsky, Bellevue Community College

Room 500/600

Modeling the amount of sunlight at various latitudes at different times of year, using precalculus methods. The presentation can be used for generating special projects for precalculus, physics and astronomy students.

Session 6, Saturday Morning, 9:15-10:15

The Fifth Dimension

Douglas Lewis, Yakima Valley Community College

Room A

For Linear Algebra Students- After playing 4-dimensional Tic-Tac-Toe, we will see how it is possible to not only persuade students analytically that two planes can intersect in one point in higher dimensions, but we can actually model higher dimensions so teachers and students can begin to conceptualize higher dimensional objects.

Colorful Complex numbers

William T. Webber, Whatcom Community College

Room 100

An encore presentation. When we assign colors to complex numbers it is hard to tell if we should be in an art class or math class. The colors add a visual element that is not often presented with complex numbers. From basic arithmetic of complex numbers to finding roots of polynomial to the generation of fractals, color helps us visualize. We hope to both give the participants new insight into complex numbers and to dazzle them with images created.

AMATYC Crossroads Revisited Project

Christie Gilliland - Green River CC, Alice Kaseberg - Lane CC,

Room 200

Phil Mahler – Middlesex CC

The AMATYC Crossroads Revisited Project is well underway. The purpose of the five-year project is to revisit the AMATYC document, Crossroads in Mathematics: Standards for Introductory College Mathematics Before Calculus in light of current issues and future trends in the teaching and learning of mathematics in the first two years of college.

Christie Gilliland, current NW Regional AMATYC VP, Alice Kaseberg, former NW Regional AMATYC VP and active participant in the Crossroads Revisited Project, and Phil Mahler, AMATYC Past President, will present a brief overview and then lead a discussion on this project.

Solving inequalities

Richard Plagge & Olga Shatunova, Highline Community College

Room 300

We will present a way to solve inequalities involving polynomial and rational functions without the use of test points. The emphasis will be on sign graphs without plus and minuses and increasing and decreasing functions.

ID Numbers and Check Digits

Paul Meier, Columbia Basin College

Room 400

A look at different identification number systems, what the numbers represent and how a check digit is assigned. Examples will include the International Standard Book Number (ISBN), credit card numbers and the Washington State driver's license.

Mathematical Applications

Alison Richards, Naval Undersea Warfare Center

Room 500/600

An encore presentation. A brief look at applications of pre-calculus level mathematics to modeling and simulation in the Navy. The Naval Undersea Warfare Center, Newport, Rhode Island has the only torpedo hardware-in-the-loop simulator to model torpedoes and their underwater environment. The development, testing, and analysis of this facility entail a wide range of mathematical expertise. I will discuss examples from trigonometry, algebra, logarithms, and projectile equations, and how they can be applied to verifying target model sizes, safety boundaries, decibels, and air-launching of torpedoes.

Session 7, Saturday Morning, 10:45-11:15

Math Jeopardy Made Easy

Douglas Lewis, Yakima Valley Community College

Room A

An encore presentation. You will participate in a brief demonstration of using a Flash/Powerpoint review program. This is a program that you can easily construct your own review or game for any class you teach. Bring a disk and get a free copy.

The Solar System in the Palm of Our Hands

Michael Round, Theory of Constraints for Education: USA

Room 100

This presentation will demonstrate, via powerful thinking and organization processes, the functioning of the solar system. The direction and speed of earth's rotation, the direction, location, and speed of earth's revolution about the sun, earth metrics (diameter, circumference, volume), seasonality, time zones, and much more will be logically connected and derived from minimal known facts, with assumptions verbalized and results verifiable. Fascinating moon and earth orbit patterns will similarly be established. Literally, the mathematical and scientific understanding of the solar system will be "in the palm of our hands."

Interpreting Mathematical Expression

Katie Stables, Western Washington University

Room 200

To assess student understanding, I like to have them write an interpretation of a mathematical expression in terms of a given application. I will share a collection of problems and the student's interpretations.

Solving absolute value inequalities

Richard Plagge & Olga Shatunova, Highline Community College

Room 300

We will present a way to solve absolute value inequalities without the use of test points. The emphasis will be on sign graphs without plus and minuses and increasing and decreasing functions. We will also discuss graphic calculator applications.

Math for people who could kill people if they can't do the math

Valerie Morgan-Krick & Ed Zimmerman, Tacoma CC

Room 400

For 2 years, the math department at TCC collaborated with the Allied Health division and the physical sciences dept. to create an intermediate-algebra level course that satisfies the math pre-reqs of the health courses, along with the math needed for supporting science classes (primarily chemistry). We have offered the class once: Come learn from our successes and mistakes!

Project-Based Business Mathematics

Jerry Wright, Seattle Central Community College

Room 500/600

An encore presentation. Seattle Central Community College has changed their business math curriculum to more accurately reflect the business world. The content of each course focuses on real-world business projects. Through a 2-quarter sequence, students complete 5 projects:

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This presentation will outline the two courses.