

IRA NIRENBERG
504-258-0618 CELL
601-795-6588 HOME
EMAIL: iranirenberg@yahoo.com
WEBSITE: www.ontele.com

Workshop Descriptions

It's Not as Oval as You Think, Have Your Pi and Understand It Too!

Grade Level 4 – 6 but can be tailored to younger groups
Length – 2 hours

Though the concept of pi has traditionally been perplexing to anyone first encountering it, it needn't be. During this workshop teachers will see how to demystify the pi idea and introduce similar mathematics with simple hands-on activities their students will have fun doing. Best of all the activities require little set up and their cost is nil.

And what's pi without a little "oval time?" Once pi has been explained teachers will venture into the world of ovals (ellipses) and their relationship to circles. Again a simple hands-on activity guaranteed to engage their students and make apparent the connection between pi, circles and ovals. Time permitting, we may even play with a triangle or two!

Fractions: They're as Easy as One – Two – Three, Don't We Wish!

Grade Level – 6 – 9
Length- 3 or 6 hours

Fractions have always been a difficult subject to teach. Part of the problem is that fractions can change their context so easily. What's whole to one person is a part to another. Context and language play vital roles in understanding what is being asked. By comparison whole number arithmetic seems intuitive. One and one make two. How can we make fractions as seamless to students as whole number arithmetic? Is it possible? Can students be helped to visualize fractions as they do whole numbers? Can the arithmetic of fractions be seen the way we see whole numbers? The answer to all these questions is yes!

This workshop introduces teachers to The Fraction ThinkBook with Gridmatics, an activity book that middle school teachers all over the country have used with their students with great success. Ira Nirenberg takes you through the entire book so you know just which activities will be the ones your students will benefit from most. Best of all, each teacher will receive a free Teacher's Edition of the book when the workshop is completed.

The Best Thing About Graphing Calculators are Parametric Equations!

Grade level – 11 & 12

Length – 2 hours

Whether you're teaching Algebra 2 or Pre-calculus for the first time or have taught them for years, you're bound to find some great ideas in this workshop. Parametric equations when expressed as functions of time have numerous real world examples that the graphing calculator can easily animate. This workshop will present linear and sinusoidal examples of parametric equations that students have found refreshing and engaging. We will investigate how objects move when no forces are present or when a restoring force acts on an object that is proportional to their displacement. We'll work on applications that animate astronomical motion under central forces. In each case participants will be given time to explore these ideas and use their calculators to work through the worksheets that they will take back to their classrooms.

Physics for Math Teachers

Grade level – 9 – 12. Best for 11th&12th

Length – 6 hours (can be modified to 3 hours)

During this day long workshop math teachers will learn the basics of Mechanics, that branch of physics which most often is used in high school textbooks to reinforce application problems. Free fall motion, vectors and two dimensional motion, and Newton's Three Laws will be discussed. This workshop is a great opportunity for math teachers to communicate more effectively with science teachers. It is especially designed for those math teachers with little or no background in physics. Participants will have ample time to acquaint themselves with the materials during the workshop. The focus of the workshop is conceptual and mathematical. The workshop emphasizes conceptual understanding before applying the mathematics. The goal is to have participants develop a feel for the physics so that the mathematics suggests itself naturally.

Lectures

Note: several lectures can be combined in order to present two – three hour workshops.

How Steep is Your Sliding Board?

You *can* start younger students on more advanced mathematical topics. Ratio, proportions and linear relationships, see what's up with some great worksheets.

Grade Level - 3 – 6

Length-45 minutes

What Every Elementary Teacher Wants to Know About Pi

A simple and inexpensive hands-on activity you can do with your students to help them understand the mysterious number Pi.

Grades- 3 – 6

Length - 45 minutes.

You *Can* Teach Circles and Ellipses in the Early Grades

A simple hands-on activity that will have students working so comfortably with ellipses they may never use the word oval again! This is a great activity that connects the relationship between circles and ellipses.

Grades 4 – 6

Length - 45 minutes

Making Fractions Make Sense

Understand why fractions cause students so many problems and see how to remedy the problems. In addition, see a great way to visualize fractions so that students will be able to add, subtract, multiply and divide fractions with simple counting. Honest!

Grades 6 – Pre Algebra

Length - 90 minutes.

The Language of Algebra: Getting Students to Read Right to Left

Mathematics is the only language that can be read left to right or right to left. It's an idea we don't usually stress to our students. Let's see what it really means and why our students so often find algebraic thinking so challenging.

Grades: Pre Algebra – Beginning Algebra

Length - 45 minutes. (90 minutes when teachers are asked to produce their own class handout)

What's 1 Got to do With It?

Some interesting insights into how the number one is used to solve many arithmetic and algebraic problems, like adding unlike fractions, dividing fractions, working with mixed fractions and basic algebra manipulation.

Grades: Pre Algebra – Beginning Algebra

Length - 45 minutes.

Linear Regression Analysis—Ever Wonder What Your TI-Calculator is Doing?

We will derive the algorithm used to do regression analysis and along the way see some nice uses for the mathematics taught in first and second year algebra.

Grades 9-12

Length - 45 minutes.

Non linear regression is also discussed in 60 minute talks

What are Residuals and Why Do We Care?

Residuals are used in regression analysis but also have interesting diagnostic uses in analyzing real world data. We'll explain what we mean by a residual, take a few striking examples and discuss why we shouldn't always trust the correlation coefficient. Bring your graphing calculators!

Grades 9-12

Length - 45 minutes. (With participant practice 70 minutes)

What Every Math Teacher Should Know About Uncertainty and Error!

Using basic algebra you can give your students a simple and straightforward way of understanding systematic and random error and at the same time reinforce ideas dealing with linear functions.

Grades 9-12

Length - 45 minutes.

The Mathematics of Up and Down: Understanding Exactly What $Y(t) = 1/2gt^2 + v_i t + y_i$ is Really All About.

Maybe you've seen this equation as, $h = -16t^2 + 96t + 128$, used as an example of an application problem in your text and wondered: where are they getting that from? Come by and you'll see! 11& 12 grades.

Grades 11 & 12

Length - 90 minutes. (Participant involvement.)

Dimensional Analysis and Approximations: They're Not Just for Physics Teachers Anymore

No, it's not just remembering to put the units down at the end of the problem, it is the problem! Find out how to use this technique to make the mathematics more meaningful.

Grades 11 & 12

Length - 45 minutes. With teacher practice 65 minutes.

The First Optimization Problem Since Antiquity?

How about a practical use for the Inverse Tangent function? This is a great hands-on activity that can be used by algebra 1 teachers or pre-calculus teachers. Take this activity as little or as far as you like and along the way see some nice geometry being done. Bring back a great worksheet to use with your students.

Grades 9-12

Length - 45 minutes. With hands-on 90 minutes.

Astronomy and Parametric Equations

Learn some beautiful applications of parametric equations using astronomical concepts. You'll really enjoy using your graphing calculators on this one! Great worksheets to use with your students!

Grades 11 & 12

Length - 75 minutes. (Participant involvement)