



**Mathematics**  
**Professional Development Offerings**  
**2009-2010**  
**Available Onsite and By Request Only**

**Elementary Mathematics**

**Back to the Basics with Whole Number Concepts (K-2, 3-5) *NEW!***

Number sense is the flexible ways of thinking about numbers and their relationships. This professional development session will help teachers develop the concept of whole number relationships in their classrooms. Teachers will receive hands-on manipulative based instructional strategies to use with their students.

**Ignite Math and Science Instruction in the Elementary Classroom, Grades K-5 *NEW!***

In order to create a more student centered classroom, teachers need to be equipped with the knowledge and skills to teach math and science in a more meaningful way. This training will provide teachers with instructional strategies that will help assist them to integrate their math and science instruction.

**Modifying Student Assignments and Assessments, Grades K-5, *NEW!***

This professional development session will equip teachers with the ability to structure their lessons and assignments to meet the needs of all types of learners. Participants should bring their own lessons plans, assignments, and assessments with them to the training, as the day will include time to work on ways to accommodate for all learners.

**Questioning Strategies in the Mathematics Classroom, Grade K-5 *NEW!***

Research shows that a student's inductive reasoning is enhanced when proper questioning strategies are implemented. This session will provide participants with questioning strategies that allow for higher order thinking in the mathematics classroom. In addition, participants will gain the knowledge and skills needed to help their students having meaningful discourse in the classroom using various levels of questioning to address all learners including special education learners, gifted learners, and English Language Learners.

### **TAKS Data Analysis: Strands vs. Focal Points, Grades 5-8 *NEW!***

This training will be designed to instruct teachers in curriculum focal points that are created directly from the TEKS for K-8 mathematics. The TEKS at each grade level are sorted into three or four categories that identify critical areas. Each category is based on a common mathematical idea to which all the TEKS in that group are related, in other words the TEKS will be bundle under each given focal point. Each curriculum focal point also includes all of the TEKS for the underlying processes in that grade, to emphasize the use of these mathematical processes throughout the curriculum. These curriculum focal points for K-8 mathematics present an organization of the TEKS at each grade level that provides direction for making decisions related to instructional time, choice of instructional materials, and depth of questioning.

### **Teaching Student-centered Mathematics, Grades K-5 *NEW!***

Van de Walle suggests that the most fundamental idea that an elementary teacher of mathematics should believe is that math should “make sense.” Helping students to develop this understanding should be the goal of every elementary teacher of mathematics. This professional development session will focus on how to manage a student centered mathematics classroom for helping students make connections between mathematics and real world concepts.

### **Understanding Algebra through Patterns, Grades K-5**

Understanding Algebra begins in Kindergarten and is built upon throughout the grades. Algebra is an essential component to any mathematics curriculum, but is often misrepresented as an abstract and difficult concept for young students to master. Research from the National Council for Teachers of Mathematics suggests that an understanding of patterns helps build algebraic reasoning skills. The session is designed to provide teachers with a deeper understanding of algebraic reasoning. Student-ready activities will be provided as a resource to strengthen understanding of patterns and algebraic reasoning in the elementary classroom.

### **Using the 5E Model of Instruction to Engage Students in Mathematics, Grades K-5**

The 5E model was developed for instruction in the Science classroom, but is also an effective instructional model for Mathematics. The Engage Phase creates interest and curiosity through questioning, hands-on activities, videos, audios, guest speakers, etc. Learning continues with Exploration, Explanation, Elaboration, and Evaluation, leading to a depth of understanding of mathematics concepts.

## ***Middle School Mathematics***

### **Beginning TI-83/84 Graphing Calculator, Grades 6-12**

This session is for beginners to the TI 83/84 graphing calculator. Graphing calculators are one type of graphing technology that is required in the middle school classroom according to the TEKS. Graphing calculators are a teaching and learning tool rather than a way to bypass mathematics. Come learn the basic keys and functions of the TI 83/84 graphing calculator.

### **Integrating Mathematics and Science in the Secondary Classroom, Grades 6-12**

Both Mathematics and Science involve problem solving with concrete experiences mandatory for concept development. Mathematics and Science share many skills, and by integrating instruction, learning becomes more efficient and more effective. Join the fun with hands-on, problem-solving activities that integrate skills and TEKS common to both subjects.

### **Strategies and Content in Middle School Mathematics**

#### **Based on Campus Data *NEW!***

This is a custom designed middle school mathematics staff development session centered on the six mathematical strands that is based on student needs depicted by the campus TAKS, benchmarks, and/or formative assessment data.

### **Structuring a Successful Mathematics Classroom, Grades 6-8, 9-12**

Student success is tied directly to who goes on between the teacher and the students in the classroom. Participants will examine effective classroom structure and practices which are vital for student to understand and retain mathematics concepts. Templates will be provided to create tools that allow implementation of those strategies, based on research by Marzano.

### **TAKS Data Analysis: Strands vs. Focal Points, Grades 5-8 *NEW!***

This training will be designed to instruct teachers in curriculum focal points that are created directly from the TEKS for K-8 mathematics. The TEKS at each grade level are sorted into three or four categories that identify critical areas. Each category is based on a common mathematical idea to which all the TEKS in that group are related, in other words the TEKS will be bundle under each given focal point. Each curriculum focal point also includes all of the TEKS for the underlying processes in that grade, to emphasize the use of these mathematical processes throughout the curriculum. These curriculum focal points for K-8 mathematics present an organization of the TEKS at each grade level that provides direction for making decisions related to instructional time, choice of instructional materials, and depth of questioning.

### **Using the 5E Model of Instruction to Engage Students in Mathematics, 6-8, 9-12**

The 5E model was developed for instruction in the Science classroom, but is also an effective instructional model for Mathematics. The Engage Phase creates interest and curiosity through questioning, hands-on activities, videos, audios, guest speakers, etc. Learning continues with Exploration, Explanation, Elaboration, and Evaluation, leading to a depth of understanding of mathematics concepts.

### **Using Manipulatives for Conceptual Understanding of Mathematics, Grades 6-8 *NEW!***

Manipulatives provide meaning for all students especially struggling learners and helps them to become successful by building the foundational learning of any given concept. Manipulatives also bring meaning to abstract ideas that many students struggle with on a daily basis. In fact, manipulatives are the building blocks to develop conceptual understanding. Observing students working with various manipulatives can provide the teacher with a sense of how students approach a mathematical problem. In this workshop the provided activities will help provide the means to guide students through the development of those critical mathematical concepts. In addition, examples of how to bridge student understanding from the concrete (manipulatives) to the abstract level (symbolic) will be explored.

## **High School Mathematics**

### **Beginning TI-83/84 Graphing Calculator, Grades 6-12**

This session is for beginners to the TI 83/84 graphing calculator. Graphing calculators are one type of graphing technology that is required in the middle school classroom according to the TEKS. Graphing calculators are a teaching and learning tool rather than a way to bypass mathematics. Come learn the basic keys and functions of the TI 83/84 graphing calculator.

### **Integrating Mathematics and Science in the Secondary Classroom, Grades 6-12**

Both Mathematics and Science involve problem solving with concrete experiences mandatory for concept development. Mathematics and Science share many skills, and by integrating instruction, learning becomes more efficient and more effective. Join the fun with hands-on, problem-solving activities that integrate skills and TEKS common to both subjects.

### **Intentional Use of Technology in the Mathematics Classroom, Graphing Calculators and Data Gathering Devices, Grades 9-12**

The mathematics classroom is designed to teach mathematics TEKS rather than technology. However, technology-based data gathering and analysis offer an opportunity to engage students in meaningful experiences. Participants will rotate through stations to measure distance, light intensity, voltage, and temperature using CBRs and CBLs and graphing calculators. TI-Nspire will be introduced to gather data for Geometry.

### **Structuring a Successful Mathematics Classroom, Grades 6-8, 9-12**

Student success is tied directly to who goes on between the teacher and the students in the classroom. Participants will examine effective classroom structure and practices which are vital for student to understand and retain mathematics concepts. Templates will be provided to create tools that allow implementation of those strategies, based on research by Marzano.

### **TAKS Data Analysis for High School Mathematics as a Basis for Curriculum Planning**

Participants will use a Data Analysis Tool, the released 2009 TAKS, a district answer key, and the class/campus TAKS data to determine the basis of errors which occurred: content (Did I teach it?), context (Did I teacher it the right way?), complexity (Was it taught at the correct level in Bloom's Taxonomy?), or crossover (Is it a reading issue or a processing issue?). Participants will begin to develop an instructional intervention plan.

### **TAKS Success with Graphing Calculators, Grades 11-12 ONLY**

Students are allowed two tools to complete the Mathematics portion of the TAKS: a Mathematics Chart and a graphing calculator. This workshop prepares teachers to help students succeed on the TAKS Mathematics Retest using the graphing calculator as a tool. The content addresses problem solving using multiple representation, which leads to a deeper and more complex understanding of concepts tested on the Mathematics TAKS.

### **Using the 5E Model of Instruction to Engage Students in Mathematics, 6-8, 9-12**

The 5E model was developed for instruction in the Science classroom, but is also an effective instructional model for Mathematics. The Engage Phase creates interest and curiosity through questioning, hands-on activities, videos, audios, guest speakers, etc. Learning continues with Exploration, Explanation, Elaboration, and Evaluation, leading to a depth of understanding of mathematics concepts.