

Math **Professional Development**

Regional/Cluster Offerings **Serving Region 10 Schools** **2010 - 2011**

All titles are available to members of the Region 10 Professional Development Cooperative

Sessions Offered at Region 10 or at Clustered Locations Only

Elementary Mathematics

Are you AWARE? *NEW*

Content specific training on the new data management system, AWARE. Come learn the capabilities of AWARE in analyzing mathematics data to inform instruction.

Differentiated Mathematics Instruction in Measurement (K-5) *NEW*

This professional development will center on the core ideas of measurement, and how these core ideas arise and are expressed as children solve problems in class. Participants will learn strategies and activities that are effective for implementing mathematics instruction that is tailored for small groups in measurement concepts. In this **two-day** session, educators will be able to analyze children's work samples in order to design effective instruction to meet students' individual needs.

Elementary Mathematics in Action (K-5) *NEW*

In this **one-day** professional development session, participants will observe research informed practices that will promote application of learning through critical thinking and problem solving. We will demonstrate quality lessons by using videos of elementary classroom students solving problems using manipulatives and pictorial models. This session will also provide the PDAS appraiser with characteristics of effective instructional practices that can be used during walkthroughs and formal observations. Participants will actively participate in math lessons, understand the reasons for success of different models, use Domain I, II and III to support student achievement, and select specific professional development for math teachers.

ESTAR Project: Elementary-school Students Texas Algebra Ready (K-4) *NEW*

The Texas Response to Curriculum Focal Points (TXRCFP) was created from the Texas Essential Knowledge and Skills (TEKS) and identifies critical areas for mathematics instruction at each grade level. The Elementary-School Students in Texas: Algebra Ready (ESTAR) training will inform and familiarize participants with the TXRCFP as a framework for improving overall mathematics instruction and achievement, in order to decrease the percentage of students who need math intervention.

First Steps in Mathematics (K-9)

First Steps in Mathematics professional development will develop and expand teachers' understanding of mathematics and how children learn mathematics. First Steps in Mathematics enables teachers to successfully diagnose, plan, implement, and evaluate their students' learning experiences. Diagnostic Tasks and Diagnostic Maps within each strand will help teachers to identify students' misconceptions about mathematics. Sample lessons and learning activities provide teachers with practical and simple ideas to support students' development. **(4 days)**

Mathematics TEKS Connections (MTC) (K-2)

This **two-day** training provides an opportunity for participants to increase the depth of their understanding about the inherent connections within the TEKS by exploring instructional strategies that facilitate thinking needed to make those connections. These content- and instruction-based connections will be explored within and between grade levels and contents. Participants will look at number concepts, place value, addition, and subtraction.

Tackling the TEKS (K-5) *NEW*

This **one-day** staff development session is a cross-curricular endeavor for teachers to see and understand how the TEKS are aligned through grade levels and across content areas. This workshop will provide teachers with an in-depth understanding of the TEKS objectives and a detailed look at specific objectives to see how rigorous lesson plans can be developed. Each participant will walk away with a better knowledge base for the content and what the state expectations are for teaching the TEKS.

Middle School Mathematics

Algebra I End of Course Success Academy (8-10) *NEW*

Examine the concepts in the Algebra I TEKS and learn strategies to prepare your students for success on the End of Course assessment during this professional development. Participants will explore hands-on, student-centered lessons designed to provide connections to and strengthen participants' knowledge of College and Career Readiness Standards (CCRS), English Language Proficiency Standards (ELPS), and Response to Intervention (RtI). Sessions will provide Texas teachers and administrators with online resources and follow-up activities through an online interactive platform, as well as allow educators to build online professional learning.

Are you AWARE? *NEW*

Content specific training on the new data management system, AWARE. Come learn the capabilities of AWARE in analyzing mathematics data to inform instruction communities for further development and growth. (**2 days**)

Effectively Assessing Mathematics Knowledge (6-10) *NEW*

Assessment of Mathematics understanding and skills allows teachers to determine what students know and what they are able to do, which can then inform instruction. Development of valid assessment items and tasks, as well as the rubrics for grading assessment tasks begin the process of assessing student mathematics knowledge. In this one-day module, participants will examine student work to evaluate student knowledge, will examine student assessment tasks and the associated rubrics, will learn the components of a valid assessment item, and will write valid assessment items. A study conducted by Hill, Rowan, and Ball revealed that teacher mathematics knowledge is significantly related to student achievement gains. This **one-day** professional development session is also designed to increase teacher mathematics knowledge.

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First Steps in Mathematics professional development will develop and expand teachers' understanding of mathematics and how children learn mathematics. First Steps in Mathematics enables teachers to successfully diagnose, plan, implement, and evaluate their students' learning experiences. Diagnostic Tasks and Diagnostic Maps within each strand will help teachers to identify students' misconceptions about mathematics. Sample lessons and learning activities provide teachers with practical and simple ideas to support students' development.

Fostering Algebraic Thinking, Part I (6-12)

This **two-day** staff development session is composed of two modules designed around analyzing student work, and listening to students. Part II continues with documenting patterns of student thinking, and asking questions of students. The goal of the professional development academy is to help mathematics teachers in grades 6-12 learn to identify, describe, and foster algebraic thinking in their students and understand students thinking through the analysis of different kinds of data, such as student work and classroom observations. The training is built around *Fostering Algebraic Thinking* by Marc Driscoll.

Fostering Algebraic Thinking, Part II (6-12)

This **two-day** staff development session is a continuation of Part I (Analyzing Student Work and Listening to Students), and is composed of two modules designed around documenting patterns of student thinking and asking questions of students. The goal of the professional development academy is to help mathematics teachers in grades 6-12 learn to identify, describe, and foster algebraic thinking in their students and understand students thinking through the analysis of different kinds of data, such as student work and classroom observations. The training is built around *Fostering Algebraic Thinking* by Marc Driscoll.

Fostering Algebraic Thinking, Extension (6-12) NEW

This **two-day** staff development session will be an extension of Part I and Part II. In this session participants will explore additional activities that emphasize habits of thinking, such as those that are associated with the effective understanding and use of algebra. Questions such as:

- 1) What can be done to help students build on arithmetic computational skills and number sense to develop their algebraic thinking?
- 2) What can be done to foster the capacity to generalize about functional relations?
- 3) How can students be helped to understand, use, and link multiple representation to algebraic concepts?

will be explored. The training is built around *Fostering Algebraic Thinking* by Marc Driscoll.

Fostering Geometric Thinking, Part I (5-11) NEW

During the **two-day** session of Part I, Fostering Geometric Thinking Seminar, participants will explore geometric thinking by engaging with open-ended problems that involve geometric thinking and by analyzing student work on those same problems. The mathematics explorations and student work analysis activities will be guided by a Geometric Habits of Mind framework. Participants will use this in-depth focus on the nature of their own and students geometric thinking to reflect on the next steps they can take with their own students to elicit productive geometric thinking. Participants are highly encouraged to also register for Part II. The training is built around *Fostering Geometric Thinking* by Marc Driscoll.

Fostering Geometric Thinking, Part II (5-11) NEW

During the **two-day** session of Part II, Fostering Geometric Thinking Seminar, participants will continue to explore geometric thinking by engaging with open-ended problems that involve geometric thinking and by analyzing student work on those same problems. The mathematics explorations and student work analysis activities will be guided by a Geometric Habits of Mind framework. Participants will use this in-depth focus on the nature of their own and students geometric thinking to reflect on the next steps they can take with their own students to elicit productive geometric thinking. The training is built around *Fostering Geometric Thinking* by Marc Driscoll.

Fostering Geometric Thinking, Extension (5-11) NEW

During the **two-day** session of Fostering Geometric Thinking Extension, participants will continue to explore geometric thinking by engaging with open-ended problems that involve geometric thinking and by analyzing student work on those same problems. The mathematics explorations and student work analysis activities will be guided by a Geometric Habits of Mind framework. Participants will use this in-depth focus on the nature of their own and students geometric thinking to reflect on the next steps they can take with their own students to elicit productive geometric thinking. The training is built around *Fostering Geometric Thinking* by Marc Driscoll.

Instructing Mathematics with the Navigator (6-12) NEW

The training will help participants integrate TI-Navigator into their classroom. The training will address effective practices when it comes to technology, how to utilize the Navigator to teach important mathematical concepts and how to use the Navigator as a tool to assess student knowledge. Since the goal is to help teachers integrate different types of technology, participants are strongly encouraged to sign up for this **one-day** staff development session even if they do not have a Navigator at their campus.

Make Learning about Living, Not Just about Knowing: PBL in Mathematics (6-12) NEW

This staff development session guides teachers to engage students in a variety of "real world" situations that accommodate a wide range of student interest. It is important for students to become critical thinkers and to develop broad knowledge that will allow them to become successful, not only in the classroom but also in real life situations. Participants will compare and contrast project based learning and problem based learning through classroom examples.

Mathematics Connection to Social Studies *NEW*

Integrating Mathematics and Social Studies allows students to see the relevance and usefulness of Mathematics and of Social Studies. In this professional development session, participants will find the connections between Mathematics TEKS and the newly refined Social Students TEKS.

Mathematics for English Language Learners (MELL) (6-12)

The primary purpose of the MELL Initiative is to improve mathematics instruction for English Language Learners, especially those at the secondary level including middle school. Classroom practices and instructional strategies that contribute to successful math instruction for English Language Learners will be explored in this *one-day* staff development session.

Mathematics TEKS Connections (MTC) (6-8)

This training is a *two-day*, research-based professional development opportunity for mathematic teachers. Participants will experience hands-on professional development activities. A major focus will be on equivalency or rational numbers, comparing and ordering rational numbers, multiplicative structures, and multiple representations. Participants will also receive many student ready lessons. The intent of MTC is to have teachers focus on and experience the inherent horizontal alignment between mathematic concepts and connections to other concepts (or big ideas) within the same grade as well as vertical alignment within other middle school mathematics courses.

Middle School Activities with the TI-Nspire Handheld (5-8) *NEW*

This *one-day* hands-on session will feature a variety of middle grades activities using the TI-Nspire handheld. The TI-Nspire is capable of computations with fractions and has a wide array of available representations including circle graphs, bar graphs, dot plots, histograms, and box and whisker plots--much more than just a graphing calculator.

MSTAR: A Geometric Approach to Algebra Readiness (5-8) *NEW*

This *two-day* training will investigate middle school geometry through the lens of the Texas Curriculum Focal Points. Materials will focus on discovering the importance of incorporating the Texas Response to Curriculum Focal Points (TxRCFP) and provide practical experience in applying differentiated instructional strategies to geometry lessons with an emphasis on algebra in order to create quality Tier 1 lessons.

MSTAR Math Academy for Grades 5-6 *NEW*

Examine the big ideas in the Grades 5-6 mathematics TEKS and learn strategies to prepare your students for success in algebra during this professional development. Participants will explore hands-on, student-centered lessons designed to provide connections to and strengthen participants' knowledge of the middle-school mathematics that is critical for success in algebra, the College and Career Readiness Standards (CCRS), English Language Proficiency Standards (ELPS), and Response to Intervention (RtI). Sessions will provide Texas teachers and administrators with online resources and follow-up activities through an online interactive platform, as well as allow educators to build online professional learning communities for further development and growth. **(3 days)**

MSTAR Math Academy for Grades 7-8 *NEW*

Examine the big ideas in the Grades 7-8 mathematics TEKS and learn strategies to prepare your students for success in algebra during this professional development. Participants will explore hands-on, student-centered lessons designed to provide connections to and strengthen participants' knowledge of the middle-school mathematics that is critical for success in algebra, the College and Career Readiness Standards (CCRS), English Language Proficiency Standards (ELPS), and Response to Intervention (RtI). Sessions will provide Texas teachers and administrators with online resources and follow-up activities through an online interactive platform, as well as allow educators to build online professional learning communities for further development and growth. **(3 days)**

MSTAR Project, Part I, Middle-school Students Texas Algebra Ready (5-8)

This training is a *two-day*, research-based professional development that is part of the Texas Algebra Readiness Initiative which also mirrors NCTM's focal points. Understanding the curriculum focal points and how to implement them in daily mathematics instruction is critical for teachers to obtain the best results when teaching for depth, understanding, and proficiency. The curriculum focal points will provide a framework to strengthen districts' curriculum network in such a way that we are able to make better use of effective instructional activities and strategies.

MSTAR Project Part II, Addressing the Needs of Struggling Students (5-8)

This training is a **two-day**, research-based professional development focused on The Texas Response to Curriculum Focal Points framework which will be utilized to design and implement strategies for those students in grades 5-8 who are identified as needing mathematics intervention. There will be a focus on components of effective Tier I instruction that uses lessons to anticipate progress monitoring as part of the RtI process and learn common aspects for differentiating instruction. Next, participants will learn what RtI is and what it is not as it applies to Tier I and Tier II. Participants will also experience using data to distinguish a student who needs Tier II intervention from those who do not. Finally, participants will discover what it takes for successful implementation of RtI. Completion of MSTAR Project Part I for Middle School is prerequisite for this training.

High School Mathematics

Algebra I End of Course Success Academy (8-10) *NEW*

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Fostering Geometric Thinking, Part II (5-11) *NEW*

During the **two-day** session of Part II, Fostering Geometric Thinking Seminar, participants will continue to explore geometric thinking by engaging with open-ended problems that involve geometric thinking and by analyzing student work on those same problems. The mathematics explorations and student work analysis activities will be guided by a Geometric Habits of Mind framework. Participants will use this in-depth focus on the nature of their own and students geometric thinking to reflect on the next steps they can take with their own students to elicit productive geometric thinking. The training is built around *Fostering Geometric Thinking* by Marc Driscoll.

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Making Algebra II Active

Algebra II instruction in the 4X4 curriculum takes on the role of preparing many students for a fourth year of mathematics, preparing students for the Algebra II End of Course Exam, and for measuring student college readiness through special purpose questions on the Algebra II EOC. This staff development session provides research-based instructional strategies to make Algebra II active! Join us for this **one-day** session of ACTIVE ALGEBRA II!

Manipulatives as Tools to Teach Objectives 6-9 (9-12) *NEW*

In this **one-day** session, participants will learn how to use manipulatives to teach concepts that are covered in Objective 6 (geometric relationships and spatial reasoning), Objective 7 (2- and 3-dimensional geometric representations), Objective 8 (concepts and issues of measurement and similarity), and Objective 9 (percents, proportions, probability, and statistics) on the High School Mathematics TAKS.

Mathematical Modeling with Application – Introduction to Modeling(9-12) *NEW*

When one looks at how data is represented in the real world, two types emerge, linear and exponential. This workshop takes a hands-on approach to teaching linear functions by collecting and analyzing real world data. During this **one-day** staff development session, participants will learn how to use recursive thinking along with technology to reinforce/re-teach linear functions.

Mathematical Modeling with Application – Modeling in the Sciences (9-12) *NEW*

Students do not make the connections between what they learn in their Mathematics and Science class. The purpose of this **one-day** staff development session is to give participants tools to use science concepts, such as Newton's Law of Cooling, Hook's Law, Population Growth and Gravity to teach Linear, Quadratic and Exponential functions.

Mathematical Modeling with Application – Modeling Finance (9-12) *NEW*

The goal of this workshop is to aid teachers in preparing Mathematical Models with Application students to make sound financial decisions. Participants in the **one-day** staff development session will learn how to integrate excel, TMV solver and online calculators to teach the following concepts: car loans, investments, buying a house, simple interest and compound interest.

Mathematics Connection to Social Studies *NEW*

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Mathematics TEKS Connections (MTC) High School Geometry (9-12)

This **two-day** module is designed to provide teachers an opportunity to investigate and study TEKS with classroom ready lessons that incorporate research-based instructional strategies. Participants will focus on understanding the connection of the TEKS to a function-based approach to Geometry. The goal is to make this course part of a larger high school math curriculum, rather than an isolated course.

Technology Applications in Algebra and Geometry: Graphing Calculators and Data Gathering Devices (8-12) *NEW*

Students are required by the Mathematics TEKS to use a variety of representations, tools, and technology to model mathematical situations to solve meaningful problems. Effective use of technology links the technology to the curriculum and allows for differentiation of instruction. In this **two-day** staff development session, participants will link technology to TEKS by experiencing lessons that integrate technology as a tool. Come prepared to enjoy learning with Graphing Calculators and Data Gathering Devices.