

Dallas | February 5–6, 2016 Effective Teaching with Principles to Actions: Implementing College- and Career-Readiness Standards NCTM INTERACTIVE INSTITUTES

Algebra

Session 1

Title: Connecting Algebraic Concepts through Well Chosen Tasks

Description: Carefully chosen tasks can provide opportunities for teachers to engage in the mathematics teaching practices that can make a difference in what students learn, challenging students to think about important ideas and inviting them to do mathematics. In doing such tasks, participants will consider the need for students to make explicit the assumptions they use in solving the problem, publicly acknowledging and validating different approaches in a deliberate, systematic discussion. Participants will discuss the mathematics teaching practices from *Principles to Actions*, with a particular focus on the importance of clearly establishing mathematical goals to focus learning.

Session 2

Title: Algebra I Tasks that Promote Reasoning and Problem Solving

Description: Not all tasks are good tasks. Adapting tasks so that they engage students in reasoning and sense making, allow multiple entry points, and can be solved using varied solution strategies is a key part of the work that teachers do. This session will provide participants the opportunity to experience three approaches for adapting tasks, to adapt concrete tasks for their classrooms, and to give feedback on tasks that have been adapted.

Geometry

Session 1

Title: Looking for Meaning Before the Task: Right Triangle Trigonometry **Description**: Participants will first build a conceptual understanding of trigonometric ratios through side relationships and similarity. Then participants will consider how mathematical structure can support mathematical reasoning by relating a triangle task to mathematical content that students will encounter in the future. The mathematics teaching practices from *Principles to Actions* will be discussed, with an emphasis on building procedural fluency from conceptual understanding.

Session 2

Title: Geometry Tasks that Promote Reasoning and Problem Solving

Description: Not all tasks are good tasks. Adapting tasks so that they engage students in reasoning and sense making, allow multiple entry points, and can be solved using varied solution strategies is a key part of the work that teachers do. This session will provide participants the opportunity to experience three approaches for adapting tasks, to adapt concrete tasks for their classrooms, and to give feedback on tasks that have been adapted.

Algebra 2

Session 1

Title: Building Functions through Given Points

Description: How many different functions pass through three points? Attendees will collaborate in writing equations of functions that pass through the given points, and they will explore new ways of writing such functions. Attendees will also discuss strategies for implementing this task through the mathematics teaching practices from *Principles to Actions* in ways that advance students' content knowledge and support them in reasoning and sense making about functions.

Session 2

Title: Algebra II Tasks that Promote Reasoning and Problem Solving

Description: Not all tasks are good tasks. Adapting tasks so that they engage students in reasoning and sense making, allow multiple entry points, and can be solved using varied solution strategies is a key part of the work that teachers do. This session will provide participants the opportunity to experience three approaches for adapting tasks, to adapt concrete tasks for their classrooms, and to give feedback on tasks that have been adapted.

Algebra 1, Geometry & Algebra 2

Sessions 3, 4, 5

Title: Mathematics Teaching Practices in your Classroom

Description: Engaging students in meaningful mathematics takes planning. Participants will rotate through three different sessions focusing on deliberate strategies for raising the level of "math talk" and examining norms for student discussions and strategies for structuring student-to-student interactions. The three sessions will use examples from different mathematical domains: Coordinate Geometry will connect properties of special quadrilaterals and triangles with algebra; Patterns and Trains will focus on observing and generalizing, in recursive and closed form, patterns generated by creating trains of different-colored blocks; and Mean Absolute Deviation will connect notions of center and spread, beginning with the mean and mean absolute deviation, as a foundation for more formal work with standard deviation.