Cultivating Mathematical Habits of Mind in All Students

Baltimore STEM Smart, March 22, 2013
Agenda

• Introduction
• Supporting the Transition to Algebra
• Mathematical Habits of Mind
• Hands-on Experience with Classroom Materials
• Small-group Discussion
• Group Sharing
Supporting the Transition to Algebra

- TTA, a 4-year R&D project funded by NSF
- Full-year intervention course to be taken concurrently with first-year algebra
- Also used in other settings including summer school and middle school as pre-algebra
- Related projects: Implementing the Mathematical Practice Standards and iPuzzle
Habits of Mind Approach

• Quickly giving students the mathematical knowledge, skill, and confidence to succeed in a first-year algebra class
• Focus on a few key mathematical ways of thinking or mathematical habits of mind
• Important algebra topics are used as contexts for fostering these mathematical practices
Transition to Algebra Habits of Mind

• Puzzling and Persevering
• Seeking and Using Structure
• Using Tools Strategically
• Describing Repeated Reasoning
• Communicating with Precision
• Consistent with Common Core State Standards for Mathematical Practice
Why Puzzles?

• **Building career skills**: problem solving when the *solution method may not be known* before starting; puzzles also allow for social *collaboration* in solving

• **Accessible logical thinking activities**: puzzle *difficulty can vary independently along two dimensions*—prerequisite mathematical skill and cognitive demand
Exploring Puzzles...

MysteryGrid $a, a^2, a^3, a^4$

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3/22/2013
Discussion

• What can you, in your school context, do to increase opportunity for all students to experience intellectually engaging content without requiring prerequisite knowledge?
Contact us

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