



# **Mathematical Practice: Reasoning and Discourse K-5**



# Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



# Positive Influences of Math Discourse

- Talk can reveal understanding and misunderstanding
- Talk supports robust learning by boosting memory
- Talk supports deeper reasoning
- Talk supports language development
- Talk supports the development of social skills



# Project Challenge

Scores on TOMA-2	Beginning
Below Average	<b>73%</b>
Average	
Above Average	23%
Superior/ Very Superior	4%



# Talk Moves

- Revoicing
- Repeating
- Reasoning
- Adding On
- Waiting



# Revoicing and Repeating

- **Revoicing**—Clarify unclear student statements and provide students the opportunity to verify the revoiced statement. “So you’re saying that . . . .”
- **Repeating**—Invite other students into the conversation by restating someone else’s reasoning. “Can you repeat what she just said in your own words?”



# Reasoning and Adding On

- **Reasoning**—Invite other students to agree or disagree with another student’s reasoning and provide an explanation. “Do you agree or disagree? Why?”
- **Adding On**—Invite students to participate through prompting for additional thoughts. “Would someone like to add something more to this line of thinking?”



# Waiting Time

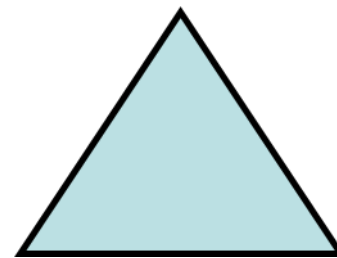
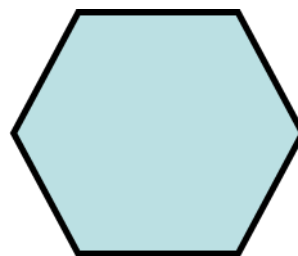
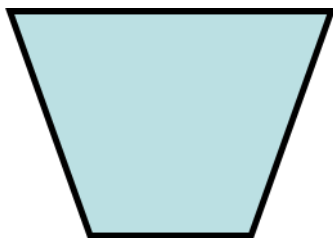
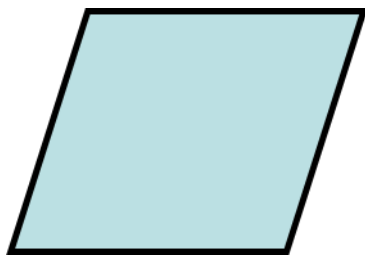
- **Waiting**—Allow more hands to raise and thoughts to develop by waiting after a question has been asked. This move also includes waiting after calling on a student for that student to verbalize his or her thoughts.





# Which Does Not Belong? Why?

- Cat, Bat, Hat, Far
- 2, 6, 5, 10



- 9, 16, 25, 43



# Digit Place

- Team 1 – keeper of the mystery number
- Team 2 – guesser of the mystery number



# Processing Digit Place

- What strategies did you develop to play the game?
- What role did communication play in supporting you in the game?
- How did playing with someone enhance your thinking?



# Talk Formats

- Whole-class discussion
- Small-group discussion
- Partner talk

*Classroom Discussions: Using Math Talk to Help Students Learn, 2009*



# Processing the Experience

- What was the value of working with a partner?
- What was the value of working with a small group?
- How do the Talk Moves and the difference formats impact the discourse?



# What is Discourse?

*Discourse is both the way ideas are exchanged and what the ideas entail.*

- Who talks? About what? In what ways?
- What kinds of questions are important to ask?
- Whose ideas and ways of thinking are valued and important?



# Math Talk in My Classroom

Respond in writing:

- How will the use of Talk Moves and Talk Formats improve discourse in your classroom?
- What obstacles do you anticipate? What ideas do you have for overcoming them?



# High Quality Math Talk

“Our goal is not to increase the **amount** of talk in our classrooms, but to increase **the amount of high quality** talk in our classrooms—the mathematical productive talk.”

*Classroom Discussions: Using Math Talk to Help Students Learn, ©2009.*





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