

The use of ST Math puzzles to lead a whole group or small group short conversation is what we call Puzzle Talks. Similar to number talks or math talks, the goal is to get students to communicate and deepen their understanding of mathematics. Puzzle Talk lessons have been designed around a model of facilitation that aligns with the perception-action cycle. ST Math games take students through this cycle over and over, giving them a safe place to fail, providing new information through immediate and informative feedback, and inviting them to persevere until they find the solution.

Puzzle Talks: More Than a Routine

As a 15-minute routine, Puzzle Talks leverage the power of the visual models inherent in ST Math and use facilitation questions to promote classroom discourse and enhance the learning experience. As teachers deliver Puzzle Talks, they are supporting students in developing habits of mind identified in the math practices/processes, developing students' problem-solving skills, and deepening their understanding of math concepts. We suggest that teachers do a 15-minute Puzzle Talk and then extend that talk over the course of the next few days to continue to explore and evaluate strategies, address misconceptions, and connect concepts and ideas to the mathematics in the ST Math puzzles.

Puzzle Talk Lesson Components

- **Puzzle Talk Lessons:**
 - The lessons include look-fors, facilitation questions, and lesson directions.
- **Extension Activities:**
 - **Pre-work Assignments (remote support):** Pre-work assignments can be given to students prior to the Puzzle Talk whether it is virtual or in person. Pre-work encourages students to think about the concept prior to the Puzzle Talk enriching the learning experience for students.
 - **Class or Home Extensions:** These activities extend the puzzles and the concepts learned in the puzzles throughout the week. The activities might be tasks, word problems, journal writing activities, or hands-on activities designed to deepen student understanding and help students make connections.

Promoting Classroom Discourse

Puzzle Talks leverage a problem-solving structure to promote an authentic learning experience for students. They are designed to extend, reinforce, connect, and build new mathematical schemas. Engaging students in discourse gives them the opportunity to process, synthesize, analyze, and communicate their understanding. Each lesson is designed to focus on student thinking through the problem-solving process. Students think about their solution strategy and discuss it with a partner to prepare for the whole class conversation.

The facilitation of Puzzle Talks has been intentionally designed to develop students' identity and agency as mathematics thinkers. The facilitation strategies focus on students becoming doers (applying, observing, analyzing), knowers (learning, understanding, revising), and sense makers (connecting, extending, reinforcing) of mathematics. These facilitation strategies are applicable when discussing a puzzle. They should also be used when engaging in the extensions, pre-work, and misconception activities to promote student thinking. Pair this information with strategies that promote student to student discourse to create an atmosphere that fosters rich math conversations.