

Puzzle Talk Facilitation Guide



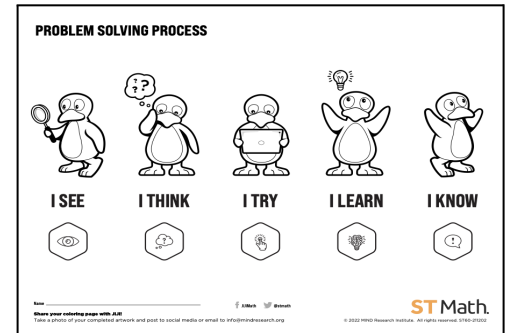
This is a guide to provide support for facilitating student thinking as teachers engage students in academic discourse around math concepts and strategies using ST Math puzzles. Read the [Puzzle Talks Overview](#) to learn more.

Grade Level: Grade 3 - 5

Objective: Learn the Problem Solving Process

Game: Big Seed

Game-in-a-Minute: [Link](#)



Teacher Prep

Purpose

- Today you are going to teach students the [Problem Solving Process](#). This process focuses on student thinking and developing problem-solving skills. It follows the [perception-action cycle](#) and can be used beyond ST Math to support students in problem-solving.
- As you engage students in the Puzzle Talk, spend time highlighting strategies, pointing out the feedback, and asking students [facilitation questions](#) to promote their thinking.
- Additional resources can be found at the [ST Math Help Site](#).

Description

- **Materials Needed:** Provide students with the Problem Solving Process Coloring Page [\[English\]](#) [\[Spanish\]](#) [\[Portuguese\]](#)
- **Puzzle Location:** [Click Here](#)
- **Duration:** 1-2 days
- **Time:** may vary 15 - 25 minutes each session

Look Fors

How does the student:

- use the Problem Solving Process?
- persevere when they get stuck?
- solve the puzzles? (Are students visualizing the changes to the shape as it goes over each belt? Do they struggle to keep track of the changes?)
- compare the shape on the left to the shape in the ground?

Facilitation Suggestions (This is what a student-led discussion might look like.)

This could occur over 1-2 days

Notice and Wonder

- Display the first puzzle from Level 1.
- Tell students you are going to teach them questions they can ask themselves to help think through the puzzles.
- Show the first puzzle and encourage students to complete this sentence "I see ____." (without suggesting a solution). Have several students share what they notice/see.
- Tell students that they can click the sky to make the clickable elements shimmer.
- Once students call out all the components they see on the screen, ask students what they wonder. What question is this puzzle asking?"

Predict and Justify

- Encourage students to complete this sentence "I think____because____."
- Have different students share their predictions and why they think those are the best prediction.
 - Ask students to name or describe their strategy they will use to test their prediction (hypothesis).
 - For example, a student may predict that they have to fill the empty blocks. In this case they would name the strategy of flipping. "I think I am going to use the strategy of flipping the shape to fill in the blocks."

Test and Observe

- Try a few student strategies both correct and incorrect. Watch the feedback and discuss what they observed in the animation.
- Have students share their observations by saying "I/we tried ____ and (explain what they saw)."

Analyze and Learn

- Facilitate students through the feedback analysis, understanding what worked and didn't work. By examining their thinking, students either reinforce their strategies or examine their errors, which provides an opportunity for them to learn from their mistakes.
 - How does this compare to what you thought would happen?
 - What did you learn?
 - How will you use what you learned?

- Be sure to use the playback features to pause, rewind, and fast forward the animation and discuss what they are learning from the feedback and use the annotation tools to highlight the learning.
- Encourage students to complete this sentence “I learned _____.”
- Continue to facilitate student thinking as you work through additional puzzles.

Connect and Extend

Levels 1-3

- Share solutions and discuss how puzzles are different as the levels progress. Encourage a variety of strategies/solutions and remember to facilitate, not teach, how to solve the puzzles.
- Ask the students if what they learned about how the puzzle behaves in previous levels can be applied here.
- When playing Level 3, ask the students if there is more than one answer to the puzzle. Explore different solutions and discuss what they thought would happen vs. what did happen.
- Before moving on, ask students to describe what is occurring in the puzzles. What are they learning? Do they notice any relationships or patterns? Chart the math concepts/words/skills that students discuss.
- Depending on how students are doing with the puzzles, you may want to skip to level 5.
- Have students work in breakout groups to complete a puzzle from Level 5. How did what they learned in their earlier puzzles help them solve this puzzle?