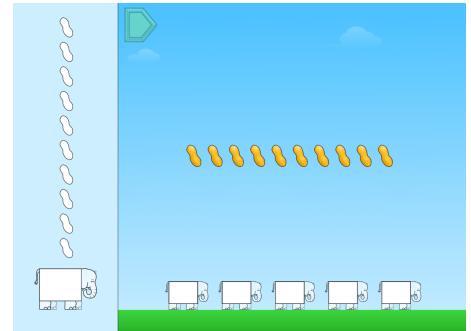


This is a guide to provide support for facilitating student thinking as teachers engage students in academic discourse around math concepts and strategies using ST Math puzzles. This talk can be done over multiple days. **Pre-work can be given to encourage students to think about the concept prior to the Puzzle Talk.** Read the [Puzzle Talks Overview](#) to learn more.

Grade Level: Sixth
Objective: Fraction Division
Game: Select Peanuts Per Elephant



Teacher Prep

Description

- **Purpose:** Focus on representing multiplication and division that involves fractions. Use guiding questions for each step in the [Problem Solving Process](#) to support student thinking and the development of problem solving skills.
- **Materials Needed:** Provide students with whiteboards and markers.
- **Puzzle Location:** Grade 6 > Fraction Division > Select Peanuts Per Elephant > Level 2
- **Duration:** Multiple days
- **Time:** May vary 10 - 20 minutes each session

Look Fors

How does the student:

- identify the operation used in the puzzle?
- use appropriate vocabulary to describe the puzzle, such as *numerator*, *denominator*, *divisor*, etc.?
- represent the puzzle with an expression or equation?

Puzzle Progression

In level 1, students are asked to determine the number of peanuts per elephant. The puzzles include only whole numbers. In level 2, the elephants have fractional parts but students still must determine the number of peanuts per elephant using the fractional parts. Puzzles are the same in levels 3 and 4 but are a mixture of whole numbers and fractions and contain more difficult fractions.



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

This would occur over multiple days

Notice and Wonder

- Display the first puzzle from Level 2. Ask, "What do you notice about this puzzle?"
- Allow a few students to share out. Listen for ideas that might include:
 - "There is one peanut in the sky."
 - "There is an elephant with 4 parts. Three of the parts are shaded."
 - "On the left side of the screen, there is one elephant with blank peanuts."
- Ask, "What do you wonder about this puzzle?" Allow students to share out. Listen for ideas that might include:
 - "What could we click on this puzzle?"
 - "How many peanuts would we pick for the elephant?"

Predict and Justify

- Ask students to think individually about how they could solve the puzzle, then turn and share with a partner before sharing as a class.
- Students should provide mathematical reasoning for the idea they want to try. They can use their whiteboard to represent the puzzle.
- List these ideas for the class to consider.

Test and Observe

- Choose one of the ideas from the class to try.
- Play the puzzle and ask students to observe and see what happens in the puzzle. Draw students' attention to how the elephant could be described with fractional parts.
- Go to the next puzzle in the sequence.
 - Consider:
 - "How is this puzzle different from the puzzle we just solved?"
 - For example, "There are ___ peanuts per part."
 - "What expression or equation could we write to represent this puzzle?"
 - For example, $\frac{1}{4}$ elephant = 1 peanut.
 - You can use the puzzle controls to pause the puzzle while students check if their answer matches the puzzle on the screen. Discuss how this might provide evidence for why the solution will work - or not work.



Analyze and Learn

- Continue with puzzles from Levels 2 and 3.
- Discuss different ways to represent and solve the puzzle.
 - “What patterns do you notice?”
 - For example, the number of peanuts is multiplied by the denominator (which is represented by the number of parts into which the elephant is divided).
 - “Does this puzzle represent multiplication or division?”
 - If students think the puzzle represents multiplication, is there a way they can use the idea of an inverse operation to describe the puzzle using division?
- You can use the puzzle controls to replay and examine what happens in the puzzle.
 - If the puzzle was correct, discuss why the strategy used was successful.
 - If the puzzle was incorrect, analyze what happened and consider how to adjust the strategy to try again.
 - “What is a number that will be too small? What will happen if we try it?”
 - “What is a number that will be too big? What will happen if we try it?”

Connect and Extend

- Continue with puzzles from Level 4. These puzzles involve fractions beyond the unit fraction.
 - “How are these puzzles different from the puzzles we’ve solved before?”
 - “Does this puzzle use multiplication or division?”
 - “What expression(s) could we write to represent this puzzle?”