



Grade 5 - Week 5

ST Math® Immersion - Virtual



Topic: Write and compare decimal fractions

[Week 5 Resources](#)

- Students work with a number line and hundred grid to represent decimal fractions. They compare decimal and fraction forms of numbers. They discuss the relationship of tenths and hundredths.

Week 5 Overview

Day 1

- Class Meeting
 - Opening
 - Goal Setting
- Lessons for the Week
 - Introduction
 - Activate Prior Knowledge
- Independent Assignment
 - Pre-Work: Select Peanuts per Elephant
 - My Thinking Path
 - ST Math Puzzles

Day 2

- Problem Solving Discussion
 - Pre-work Review and Discussion
 - My Thinking Path Discussion
- Puzzle Talk: Select Peanuts per Elephant
- Independent Assignment
 - Problem Solving
 - Math Writing Prompt
 - ST Math Puzzles

Day 3:

- Problem Solving Discussion
 - Problem Solving Review and Discussion
 - My Thinking Path Discussion
- Puzzle Talk: Select Peanut or Elephant
- Independent Assignment
 - Problem of the Day
 - Math Writing Prompt
 - ST Math Puzzles

Day 4:

- Problem Solving Discussion
 - Problem Solving Review and Discussion
 - Reflection Poster
 - My Thinking Path Discussion
 - Thinking and Reflecting
- Post-Assessment
- Independent Assignment
 - ST Math Puzzles

Day 5:

- Friday Math Clubs
 - My Thinking Path Discussion
 - Problem Solving
 - Thinking and Reflecting Time: Poster Showcase
 - Celebrate



Class Meeting (20-30 minutes)

Opening

Welcome students to a new week.

- Use the Slide Deck for [Class Meeting](#) or do the Weekly Warm-Up.

Weekly Warm-Up

Tell students you have already seen them persevere in their math work even when it's been challenging (give a couple examples.)

Ask students: What is something else in your life that has challenged you and how did you get better at it? Give students a few minutes to stop and write or draw in their math journal before sharing out.

Goal Setting

Discuss last week's goal. Did student's achieve their goals? What did they do that helped them? What do they need to improve on?

- Set an ST Math goal for the week.

Lessons for the Week (20-30 minutes)

Introduction

Let students know that this week they will be focused on solving problems involving dividing fractions.

- Brainstorm what students know about this topic and what they wonder about this topic.

Activate Prior Knowledge

Pose a problem focused on helping student understand division

- Display the following problems to students:
 - Problem A: "Coach Rudd needs 3 soccer teams. If 15 kids sign up to play soccer, how many kids will be on each team?"
 - Problem B: "Coach Rudd had 15 kids sign up to play soccer. If there are 3 kids on a team, how many teams can Coach Rudd make?"
- How would you approach each problem?
- How are the problems similar/different?
- What is your solution to each problem?
- How did you arrive at that solution?
- Write an equation to represent each problem.

Teacher NOTE: Students should write $15 \div 3 = 5$. Explain that both division situations can be solved by dividing 15 by 3, but the first problem represents fair sharing and the second problem represents repeated subtraction. Both fair sharing and repeated subtraction are strategies to solve division problems.

Pose a problem focused on helping students use the relationship between multiplication and division to solve a division problem.

Ask students: How can you use a multiplication fact to help you solve a division problem?

Display the problem 2×3 and ask students to solve.

Then ask, "If $2 \times 3 = 6$, what is $6 \div 2$?"

- When students solve the problem and get 3 as an answer, remind students that 2, 3 and 6 are part of a number bond (or fact family). The numbers in a number bond can be used to create 2 multiplication and 2 division problems using just the 3 numbers in the number bond. Repeat with a few other whole number multiplication and division fact families.
- Then display the problem $5 \div \frac{1}{3}$ and say to students, "Could we think of this problem as $? \times \frac{1}{3} = 5$?"
- How could we solve this multiplication problem? How does this help us to solve the division problem?"
- Have students draw a picture to determine how many $\frac{1}{3}$ pieces are needed to make 5. They should determine that 15 one third pieces are needed. Say to students, " $5 \div \frac{1}{3} = 15$ because $15 \times \frac{1}{3} = 5$."
- Repeat with other whole number divided by a fraction problems.

Independent Assignment (45-60 minutes)

Pre-work

- Complete the Pre-work for Select Peanuts per Elephant.

My Thinking Path

- Have students write in the topic "Write and compare decimal fractions." on their My Thinking Path and complete the first two boxes.

ST Math Puzzles

- Play ST Math for 30 minutes.
- Complete the ST Math Puzzle Reflection.



Problem Solving Discussion (20-30 minutes)

Pre-work Review & Discussion:

- Discuss the first two questions on the pre-work with the students.
- Review the problem. Have students share their strategies and solutions. Discuss.
 - NOTE: You may want to strategically share student work that will promote a rich discussion.

My Thinking Path Discussion:

- Ask students to reflect on the discussion yesterday about what they know about writing and comparing decimal fractions.
- Review the whole group brainstorming and see if there are any additional things students would like to add. Was there anything new that they can add to their understanding after completing the pre-work?
- Discuss any questions the students have. Use this as an opportunity for students to see each other's knowledge as mathematical resources they can build from. The teacher's role here is to facilitate the discussion.
 - NOTE: You may want to put students in breakout groups for the discussion and then return to the whole group to summarize the conversations.

Puzzle Talk: Select Peanuts Per Elephant (20-30 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Have students gather paper/whiteboards to represent problems and show their work.
- Display Grade 3 > Comparing Fractions > Fraction Order Fill > Level 1

Notice and Wonder

- Show a puzzle from Level 1. Ask students: "What do you notice? What do you wonder?" Allow students to share.

Predict and Justify

- Ask students to think of their strategy for solving the puzzle and predict what will happen when they try it.
- Have students determine a strategy and make a prediction of what will happen when they try it and why.
- Have students type their responses in the chat.
- Have students share out. Ask the students to think about if they agree/disagree with the strategy and why. How does it relate to their strategy?
- Try one of the students' ideas. (As you try students' strategies, be sure to try strategies that work and those that don't. Analyze the feedback in both correct and incorrect solutions.)

Test and Observe

- Watch the feedback together and discuss what you saw.

Analyze and Learn

- Ask students what happened in the puzzle. How does it compare to what they thought would happen? How does this affect their strategy?

Connect and Extend

- Show the next puzzle in Level 3. Have students solve the puzzle and record their solution as an equation.
- Display a puzzle from Level 3 that represents a whole number multiplied by a fraction (e.g., Each elephant eats 12 peanuts, how many peanuts will $\frac{1}{3}$ elephant eat?).
- Ask students: Does this puzzle represent division or multiplication? How do you know?
- How could we represent this puzzle using a number line?"
- Have students draw a number line on their paper/whiteboard and represent $12 \times \frac{1}{3}$.
- Discuss how they partitioned the number line, the size of the jumps and the total number of jumps.
- Repeat with additional puzzles from Level 3.

How does the student:

- determine how many peanuts 1 elephant eats given the number of elephants fed and the total number of peanuts?
- explain their strategy for solving the puzzle?
- represent the puzzle with an equation?
- explain what each number in the equation represents?
- determine if the puzzle represents a whole number divided by a fraction or a whole number divided by a whole number?

Independent Assignment (45-60 minutes)

Problem of the Day

- My dog's food comes in 8 pound bags. My dog eats $\frac{1}{4}$ of a pound of food each meal. How many meals will one bag of dog food serve?

Math Writing Prompt

- When you divide a whole number by a fraction less than 1, the answer is greater than the whole number you divided. Explain why that happens.

ST Math Puzzles

- Play ST Math for 30 minutes.
- Complete the ST Math Puzzle Reflection.



Problem Solving Discussion (20-30 minutes)

Problem Solving Review & Discussion:

- Review the problem from yesterday. Discuss any additional strategies or student work you want shared.
- Go over the math writing prompt and discuss.

My Thinking Path Discussion:

- Ask students to reflect on the discussion yesterday and add additional thoughts to their My Thinking Path document. You may want to ask a few students to share how they are thinking about the concept and how their thinking may have been challenged or changed.

Puzzle Talk: Select Peanut or Elephant Multiplier (20-30 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Have students gather paper/whiteboards to represent problems and show their work.
- Display Grade 5 > Fraction Division > Select Peanut or Elephant > Level 1

Notice and Wonder

- Show a puzzle from Level 1. Ask students: "What do you notice? What do you wonder?" Allow students to share.

Predict and Justify

- Ask students to think of their strategy for solving the puzzle and predict what will happen when they try it.
- Have students determine a strategy and make a prediction of what will happen when they try it and why.
- Have students type their responses in the chat.
- Have students share out. Ask the students to think about if they agree/disagree with the strategy and why. How does it relate to their strategy?
- Try one of the students' ideas. (As you try students' strategies, be sure to try strategies that work and those that don't. Analyze the feedback in both correct and incorrect solutions.)

Test and Observe

- Watch the feedback together and discuss what you saw.

Analyze and Learn

- Ask students what happened in the puzzle. How does it compare to what they thought would happen?

Connect and Extend

- Show the next puzzle in Level 1. Ask students: "How could we represent this puzzle with an equation? What is happening in this puzzle? Does this puzzle represent multiplication or division? How do you know?" Work together to write a multiplication equation to represent the puzzle (e.g., If 1 elephant eats 4 peanuts, how many peanuts does 3 elephants eat. $3 \times 4 = 12$ or $4 \times 3 = 12$).
- Ask students: "What does each number in this equation represent?" Repeat with a few other puzzles from Level 1 until the first puzzle with a fraction.

- Ask students: How is this puzzle different? What is happening in this puzzle? How could we represent this puzzle with an equation?" (e.g., If 1 elephant eats 12 peanuts, how many peanuts does $\frac{1}{3}$ elephant eat. $\frac{1}{3} \times 12 = 4$ or $12 \times \frac{1}{3} = 4$.) Solve additional puzzles in Level 1.
- Display a puzzle from Level 2.
- Ask students: What do you notice? What is different about this puzzle? Does this puzzle represent multiplication or division? How do you know?"
- Discuss what they know in the puzzle and what is unknown. Put students in breakout groups. Have them work with a partner and determine their solution.
- Try a student's solution and watch the feedback. Say to students, "What is happening in this puzzle? How did you determine how many elephants to select?" (For example, If each elephant eats 5 peanuts and we have 20 peanuts total, how many elephants can we feed? How do you know?")
- Ask students: How could we represent this with an equation?" Model how to write a division equation to match the puzzle (e.g., $20 \div 5 = 4$). Ask students: What does each number in this equation represent?"
- Repeat with the next puzzles in Level 2 until you come to a puzzle with a partitioned elephant.
- Ask students: How has the puzzle changed? The elephants have been partitioned into how many equal parts? Why?"
- Compare this puzzle to whole number by whole number division and represent the puzzle with an equation (e.g., $2 \div 3 = \frac{2}{3}$).
- Repeat with additional puzzles in Level 2.

How does the student:

- determine what is known and unknown in the problem?
- explain whether the puzzle represents multiplication or division?
- explain the strategy used to solve the puzzle?
- represent the puzzle with an equation?
- explain what each number in the equation represents?
- discuss the relationship between multiplication and division and the role of the numerator and denominator in determining the solution?

Independent Assignment (45-60 minutes)

Problem of the Day

- The art teacher had 6 cups of sparkles for an art project. He gave each student in Ms. Clark's class $\frac{1}{3}$ of a cup of sparkles to use. How many students are there in Ms. Clark's class?

Math Writing Prompt

- $\frac{1}{8} \times 4 = \frac{1}{2}$ Write two division equations that would use these same three numbers.

ST Math Puzzles

- Play ST Math for 30 minutes.
- Complete the ST Math Puzzle Reflection.



Problem Solving Discussion (20-30 minutes)

Problem Solving Review & Discussion

- Review the problem. Have students share their strategies and solutions. Discuss.
 - NOTE: You may want to strategically share student work that will promote a rich discussion.
- Review the math writing prompt.

Reflection Poster:

Create a poster that shows what you learned in the ST Math Immersion. Be creative. (Due Friday.)

- Some examples of what you might include are:
 - Show the hardest problem you solved.
 - Share how you grew on your My Thinking Path.
 - Write a challenging question for another student.
- Teacher Tip: You may want to make a shared google slide deck. Assign each student a slide. They create their “poster” on this slide. This makes it easy to conduct gallery walks, to see everyone’s work, and to discuss.

My Thinking Path Discussion

- Ask students to reflect on the discussion yesterday and add additional thoughts to their My Thinking Path document. You may want to ask a few students to share how they are thinking about the concept and how their thinking may have been challenged or changed.

Thinking and Reflecting

- Biggest take-aways - Think about all you have learned throughout this program. How has your thinking changed? What is the biggest takeaway? What challenged you? What did you learn?

Post-Assessment (20-30 minutes)

Post-Assessment

- The information in the Post-Assessment can be used to (1) see how students' understanding of the concepts progressed through the program (2) identify ST Math objectives that students may still need for extra practice.

Independent Assignment (45 minutes)

ST Math Puzzles

- Play ST Math for 30 minutes.
- Complete the ST Math Puzzle Reflection.



Friday Math Clubs (45-60 minutes each)

This is the last day and it is important for students to reflect and celebrate.

My Thinking Path Discussion

- Review student's learning with My Thinking Path. Ask them how their thinking has changed around the topic. How have the puzzles helped them better understand the math topic? What additional questions do they have?

Problem Solving

- Select problems from the Post-Assessment to engage students in discussion around. You may want to select problems where you can share some example student work (keep it anonymous). You may also want to engage in discussions around problems with interesting solutions, problems with a variety of strategies, and/or problems where several students struggled.

Thinking and Reflecting Time: Poster Showcase

- Have students share their posters, challenge questions and biggest take-aways. (You can do this in whole group or small pairs)
- If your students were in pairs, bring them back to the whole group for more discussion. Ask students to think about all that was learned during this program. How has it helped them? What is the most important thing that they learned?

Celebrate

Students have worked hard in the last five weeks to grow as mathematicians. Take time to celebrate students' successes! Choose from these celebrations or have students come up with their own:

- Send out the Celebrate Brilliance certificates or have students share who has earned them.
- Showcase the Immersion posters students have made.
- Have a dance party. Put music or a video on your screen and have students move with you. Tell them to turn it up.
- Play a favorite ST Math puzzle together.
- Make it Spirit day or week. (pajama day, bring your favorite snack, hat day, crazy sock day, etc.)
- Make a class list of "proud moments" in immersion. Ask students: when did you feel proud?" Have students look through the work they have done or their ST Math tracker to reflect.