



Grade 3 - Week 1

ST Math® Immersion - Virtual

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resources



Topic: Acclimate Students to ST Math Virtual Immersion

[Week 1 Resources](#)

- During this week, students will discuss strategies and practice how to overcome hurdles in ST Math. They will have opportunities throughout Immersion to relate overcoming hurdles to the larger world of math and beyond.
- Students will also learn the components of the program (My Thinking Path, Puzzle Talks, Pre-work, Problem of the Day, Math Writing Prompts, and ST Math Puzzle Reflections).
- Most importantly, students will reflect on their thinking and the strategies they use to solve problems and overcome challenges as they get excited about exploring mathematics.

Week 1 Overview

Day 1

- Class Meeting
- Lessons for the Week
 - Introduction to ST Math
 - Goal Setting
- Problem Solving
 - Problem of the Day
 - Math Writing Prompt (Optional)
- Immersion 3rd Grade Pre-Assessment
- Independent Assignment
 - ST Math Puzzles

Day 2

- Class Meeting
 - Review and Discussion
- Puzzle Talk: Big Seed
- Independent Assignment
 - Pre-work: JiJi Cycle Basket
 - ST Math Puzzles

Day 3:

- Problem Solving Discussion
 - Pre-work Review and Discussion
 - Bonus Activity
 - My Thinking Path Discussion
- Puzzle Talk: JiJi Cycle Basket
- Independent Assignment
 - Problem of the Day
 - Math Writing Prompt (Optional)
 - ST Math Puzzles

Day 4:

- Problem Solving Discussion
 - Problem Solving Review and Discussion
 - My Thinking Path Discussion
- Puzzle Talk: JiJi Cycle
- Independent Assignment
 - Problem of the Day
 - Math Writing Prompt (Optional)
 - ST Math Puzzles

Day 5:

- Friday Math Clubs
 - Problem Solving Review and Discussion
 - Small Group Activity (Choose One)
 - Virtual Math Talk
 - Word Problem
 - My Thinking Path Discussion
- Independent Assignment
 - ST Math Puzzles



Class Meeting (15-20 minutes)

Opening

Welcome students to the start of Immersion.

- Use the Slide Deck for [Class Meeting](#) to support this opening class meeting.
- The purpose of this class meeting is to
 - build community
 - set norms
 - establish procedures
 - introduce ST Math (if needed)
 - introduce ST Math Immersion and its components (My Thinking Path, ST Math Puzzle Reflections, Puzzle Talks, Pre-work, Problem of the Day, and Writing Prompts).
 - answer any questions the students may have to better prepare them for the ST Math Immersion virtual program.

Lessons for the Week (20-30 minutes)

Reminder About or Introduction to ST Math

If your students have used ST Math, you will not need to do a formal introduction to the program. Instead focus on engaging them in discussions where they can share tips, encouragement, and success stories with ST Math.

- Brainstorm what students like about ST Math. What tips do they have to share? What do they do when they get stuck?
- Have students share their favorite games and why they are their favorites.
- Discuss goal setting with students and set a puzzles and minutes goal for this first week.
- Provide students with a tracker and walk them through how to use it.
- Let the students know if they will be doing the Journey, Assignments or both. Remind them that you are able to see the minutes and puzzles they have completed during the week.

For students who are new to ST Math

- Choose one of the following ways to introduce ST Math to your students.
 - Read students the *JiJi to the Top* [book](#) or show a [video telling the story](#) to introduce ST Math.
 - Play the Slinky [game](#) with your students. During game play explain that ST Math is a program that teaches math in a very different way.
 - Encourage students to look at the visual models on the screen and determine what they think they should do.
 - Point out the things that are clickable and the clues that are given on the screen (click on the sky and the parts of the screen shimmer to show you where to click).
 - For students in grades 2 and up, share that each objective begins and ends with a short quiz.
 - Make sure students understand that they have to complete all the puzzles in a level before moving on to the next.
- Ask students if ST Math reminds them of other math programs. Why or why not?

Goal Setting

- Discuss goal setting with students and set some goals for this first week of their asynchronous ST Math time. Appropriate weekly goals might include (logged in every day, spent 60 min playing, earned 40 puzzles, etc.).

Problem Solving (20-30 minutes)

Problem of the Day

- Create a class “Getting to Know Our Class” Chart. Ask the students questions to gather data about the class and record the information on a virtual white board, google doc, or word document. Record their responses with tally marks. (You will use this information throughout the week so it is important that it is in a form you can refer back to. Determine which questions you want to ask and how many data sets you want to discuss with the students.)
 - Some questions you may ask to gather data might include: How many students are in this class? How many students have brown eyes? Blue eyes? Green eyes? How many students in the class have black hair? Brown hair? Blonde hair? Red hair? How many have pets? Siblings? Favorite subject? Favorite flavor ice cream? Favorite color?
 - Have students make mathematical comparisons with the data. Have students prove their statements. For example: One-fourth of the class likes strawberry ice cream. There are 20 students in the class and 5 of them like strawberry ice cream. So $\frac{5}{20}$ of the class like strawberry ice cream. $\frac{5}{20}$ is equivalent to $\frac{1}{4}$.

Math Writing Prompt (Optional)

- Have students complete the math writing prompt “What do you hope to learn in this program?”

Immersion Pre-Assessment - Done Independently (20-30 minutes)

Assign your students the Immersion Grade 3 Pre-Assessment. The information in the Pre-Assessment can be used to (1) gain an understanding of student needs (2) identify ST Math objectives that students may need to be assigned for extra practice (3) measure student understanding from the beginning to the end of the ST Math Immersion program.

This is an independent assignment but you may want to have them complete it while you are online in case they have questions they need to ask you.

Independent Assignment (30 minutes)

This is the time students will work on their own independent of the live lessons with the teacher. It is important for students to be accountable for the learning they do during their independent time. ST Math Puzzle Reflections are great tools to provide to students so they can communicate to the teacher what they have learned.

ST Math Puzzles

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



Class Meeting (15-20 minutes)

Review and Discussion:

- Engage students in a discussion about what they learned during their ST Math Time yesterday. What strategies do they use when they are struggling to figure out a puzzle?
- Discuss mistakes and student struggle.
 - Point out to students that the mistakes are learning opportunities. How do students feel when they learn from mistakes? What are some words or phrases they can say to encourage their classmates when they struggle? (It would be good to collect these as quotes and share them with students in your online classroom where they can access them when they need encouragement.)
 - NOTE: One strategy to help students understand that struggle is good is to re-label struggle by saying that students are entering the Zone of Perseverance.

Puzzle Talk: Big Seed (20-30 minutes)

- ◻ Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- ◻ Provide students with whiteboards and dry erase markers.
- ◻ Display Grade 3 >Challenge Objective > Big Seed > Level 1.

Notice and Wonder

- 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 notice _____” (without suggesting a solution). Have several students share what they notice.
- Tell students a tip to help them is to find what is clickable.
- Once students call out all the components they see on the screen, ask students what they wonder. What is the question this puzzle is asking?”

Predict and Justify

- Encourage students to complete this sentence “My prediction is _____ 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. “My strategy is to flip 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.

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 “Something I learned from the feedback is _____.”
- Continue to facilitate student thinking as you work with through additional puzzles.

Connect and Extend

- Share solutions and discuss how puzzles are different as the levels progress. Include and 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 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? (If breakout groups are not possible, partner students up and have them send a private chat with their solutions.)

How does the student:

- solve the puzzles? (Are they visualizing the changes that will happen as they flip and change the color? Do they struggle to keep track of the changes?)
- solve the puzzles when all the pieces are not connected together?

Independent Assignment (45-60 minutes)

Pre-work

- Complete the Pre-work for JiJi Cycle Basket.

ST Math Puzzles

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



Problem Solving Discussion (20-30 minutes)

Pre-work Review and Discussion:

- Put students in breakout rooms and have them discuss their pre-work.
- Discuss as a whole group. Focus the discussion on the strategies students used to solve the problem.

BONUS ACTIVITY:

- Play two truths and a lie with the students. Use the class data generated on Day 1 to create two true statements and one lie. Have the students determine which statement is not true and prove why mathematically. Make several sets to do with the class (e.g., $\frac{1}{2}$ of our class has a pet, $\frac{1}{4}$ of the class has a dog, $\frac{2}{3}$ of the class has a cat).
 - This provides an opportunity to challenge students, discuss strategy, and informally assess them. This activity can be done as part of the opening class meeting for the remaining days this week.

My Thinking Path Discussion:

- Let students know that this week they will be focused on comparing fractions and counting by unit fractions.
- Brainstorm what students know about this topic and what they wonder about this topic.

Puzzle Talk: JiJi Cycle Basket (20-30 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Provide students with whiteboards and dry erase markers.
- Display Grade 3 > Fractions on the Number Line > JiJi Cycle Basket > 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

- Have students make a prediction and determine a strategy for solving the puzzle. Have students share their predictions, and why. Do they agree/disagree with each other?

Test and Observe

- Try one of the students' ideas and discuss the feedback. (As you try students' strategies, be sure to try those that work and those that don't).

Analyze and Learn

- Ask students to think about how what they saw happen compares to their prediction, such as "How did you know where to place the basket?"
- Show a puzzle from level 2. Repeat the Problem Solving Process, guiding students to share strategies and their reasoning.
- Discuss unit fractions and identify the numerator and denominator of the fraction on the number line.
- Show another puzzle from Level 2.
- Discuss how students determine how many unit fractions to select.

Connect and Extend

- Show a puzzle from level 3, asking how it is different from Level 2.
- Discuss unit fractions and the numerator and denominator of the fraction on the number line, and the mixed number and a/b ($b > 0$) fraction name for the puzzles greater than 1.
- Show a puzzle from level 4. Discuss how this puzzle compares to the other levels, unit fractions and the numerator and denominator of the fraction on the number line.
- Continue with puzzles from levels 3 and 4.
 - Discuss unit fractions, mixed numbers vs. a/b ($a > b$ and $b > 0$), how many unit fractions are needed to make one.

How does the student

- explain how they determined the size of the fraction piece? (It would take 4 pieces this size to make a whole circle.)
- count the fraction pieces? Count the fractions greater than 1? (5 one-thirds = $5/3$)
- determine the label for the whole numbers? ($3/3$ is equivalent to 1)

Independent Assignment (45-60 minutes)

Problem of the Day

- Compare these fractions and explain how to locate them on a number line. $5/8$, $6/8$, $2/8$, $9/8$, $3/8$.

Math Writing Prompt (Optional)

- Compare counting whole numbers to counting unit fractions. How are they alike and how are they different?

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.
 - 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: JiJi Cycle (20-30 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Provide students with whiteboards and dry erase markers.
- Display Grade 3 > Fractions on the Number Line > JiJi Cycle> 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

- Have students make a prediction and determine a strategy for solving the puzzle.
- Have students share their predictions, what they think will happen and why. Do they agree/disagree with each other? Why?

Test and Observe

- Try one of the students' ideas. (As you try students' strategies, be sure to try strategies that work and those that don't. Analyze and discuss the feedback in both correct and incorrect solutions.)

Analyze and Learn

- Ask students to think about how what they saw happen compares to their prediction.
- Show a puzzle from Level 2. Discuss how this level compares to the puzzles from yesterday's game.
- Have students think about and then discuss with a partner how they might solve the puzzle.
- Share whole group.
- Discuss unit fractions and the numerator and denominator of the fraction on the number line.

Connect and Extend

- Continue with puzzles in Levels 2, 3, and 4. Compare and contrast puzzles from the different levels and how to use what they've learned in previous levels to solve other puzzles.
- Discuss how puzzles can be represented with an expression (no equals sign) or equation.
- Discuss unit fractions, mixed numbers vs. $\frac{a}{b}$ ($b > 0$) ($a > b$), how many unit fractions are needed to make 1.

How does the student

- write equations to show equivalence of fractions?
- discuss the size of the fractions (denominator) and the number of unit fractions (numerator) of that size to compare equivalent fractions?
- partition a number line to place fractions?
- add fractions to a number line?

Independent Assignment (45-60 minutes)

Problem of the Day

- Nancy, Bob, and Devin played a game to see who could get farthest on a number line. They each rolled a fraction cube. Nancy rolled $\frac{1}{4}$ and 1. Bob rolled $\frac{3}{4}$ and $\frac{3}{4}$. Devin rolled $\frac{3}{4}$ and $\frac{1}{2}$. Where did each player land on the number line? Who won?

Math Writing Prompt (Optional)

- Explain why a JiJi cycle with $\frac{1}{3}$ fraction circles and a JiJi cycle with $\frac{1}{4}$ fraction circles could both land on the same location on a number line and label it 1.

ST Math Puzzles

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



Friday Math Clubs (30-45 minutes for each small group)

Divide the class into small groups and meet with each group as a Friday Math Club. This allows you to personalize instruction for students.

Problem Solving Review and Discussion

- Review yesterday's Problem of the Day. Strategically share student work that will promote a rich discussion.
- Go over the math writing prompt and discuss.

Small Group Activity

Choose One

- **Virtual Math Talk**
 - Display a puzzle in Level 3 that shows only $\frac{1}{4}$. Ask students: Which fraction is bigger, $\frac{1}{4}$ or $\frac{1}{2}$? How could we use the number line to prove it?
 - Have students work with a neighbor to answer the question using the number line.
 - Discuss the meaning of the denominator and why breaking one whole into 4 equal pieces vs. 2 equal pieces means the $\frac{1}{4}$ pieces are smaller.
 - Find a puzzle in Level 4 with thirds and ask students to repeat with $\frac{1}{3}$ and $\frac{1}{2}$. Remind students that the bigger the denominator gets, the smaller the pieces become.
 - Display a puzzle from Level 3, but don't let the students see it.
 - Read the puzzle to students (e.g., JiJi's cycle has four $\frac{1}{4}$ pieces). Students should mark on their number line where they think the basket should go.
 - Reveal the puzzle so students can see the pieces. Allow students to change their answer if they want to.
 - Discuss with students where they think the basket should go and why. Ask if anyone changed their answer and why. Solve the puzzle.
 - Repeat with other puzzles from Level 3 and Level 4.
- **Word Problem**
 - Oh no! Some fractions fell off the number line and JiJi needs to put them back on! Create a number line for JiJi with the following fractions in the correct location so JiJi knows how to fix the number line. $\frac{1}{2}$, $\frac{4}{4}$, $\frac{2}{4}$, $\frac{1}{4}$, $\frac{3}{2}$

My Thinking Path Discussion:

- Review the learning from this week. Remember to have students go back to the problem solving they have done this week. Have students respond to the following questions:
 - How has your thinking about this problem changed?
 - What is your biggest takeaway?

Independent Assignment (45 minutes)

ST Math Puzzles

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