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Grade 1 | Module 1

Topic: Acclimate Students to ST Math Immersion

[Module 1 Resources](#)

This module's focus: Getting your students started on ST Math and acclimated to the structure of the ST Math Immersion program. Whether or not your students have been using ST Math, it is important to introduce ST Math. During this module, students will discuss strategies and learn how to overcome hurdles. Students will also learn the components of the program (My Thinking Path, Puzzle Talks, Problem Solving, Problem of the Day, Instructional Stations, Exit Tickets, and Puzzle Reflections). Most importantly, in this module students will actively engage in thinking about their thinking, the strategies they use to solve problems, and overcome challenges while getting excited about exploring mathematics.

Module 1 at a Glance

Printed Resources

- **Bookmarks**
 - Problem Solving Process Bookmark
 - Problem Solving Facilitation Bookmark
- **K-2 Table Games Directions**
 - Number Kicker
 - Make Ten Concentration
 - Addition War (Day 4)
 - Pyramid Make Ten (Day 4)
- **Game Mat**
 - Creature Cards
- **Problem Solving Journal** (pages 2–7)
 - My Thinking Path
 - Problem of the Day (POD)
 - Exit Tickets
 - ST Math Puzzle Reflections

Optional Printed Resources

- Accomplishments Log
- ST Math Activity Pages
- Pre-Assessment
- Pre/Post Quizzes

Immersion Slide Deck (slides 2–19)

- The Immersion Slide Deck is intended to be projected to the class in a whole group setting.

Teacher Resources

- ST Math Activity Pages - Teacher Introduction
- Teacher Planner

Supplies for Table Games (per group)

- **Number Kicker** - 1 deck of cards with face cards removed, 1 printed Number Kicker game board (0 to 20) for each player, centimeter cubes (4 for each player)
- **Make Ten Concentration** - 2 Decks of JiJi Creature Cards

My Thinking Path

- This daily opportunity for reflecting will be introduced on Day 3 of this module. Students will reflect on addition and subtraction of whole numbers.

ST Math Puzzle Talks

- Attribute Transform
- Bouncing Shoes
- Bouncing Shoes with Numbers

Problem Solving

Note: The Problem of the Day in the Problem Solving Journal is intended to be an independent activity for students. Those problems are intentionally not included in the slide decks.

Day 1: (whole class)

- **Problem Solving Slide Deck**- 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 chart. For example:
 - 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?)
- **Problem Solving Journal** - Students are introduced to the journal and complete together with the class.

Day 2: (whole class)

- **Problem Solving Slide Deck**- Remind students about yesterday’s Problem of the Day. How we can describe the class mathematically? Generate a list of three to five things students want to know about each other, such as favorite ice cream flavor, favorite color, number of siblings, number of pets, favorite subject in school, month of birth, favorite sport, etc.
- **Problem Solving Journal** - Students complete together with the class.

Day 3:

- **Problem Solving Slide Deck**- JiJi has some shoes to give to friends. JiJi has 12 shoes. Which friends can JiJi give shoes to? Is there another way JiJi could give shoes away? Write an equation to show that these two solutions are equal. Can JiJi give shoes to more than two friends? Write the equation for this solution.
- **Problem Solving Journal** - Students solve independently. Which creatures can wear 10 JiJi shoes?

Day 4:

- **Problem Solving Slide Deck**- Students will find the missing number to complete the mathematical equation and show their solutions as jumps on the number line.
- **Problem Solving Journal** - Students solve independently. Students will find the missing number to complete the mathematical equation and show their solutions as jumps on the number line.

Preparing for Instructional Stations

This module is focused on teaching students about the structure of the stations, how to transition between stations, expectations of a station, and responsibilities in a station. It is very important to spend days 1–3 really teaching the procedures of the stations. (See [Instructional Stations Overview](#) for tips and best practices.)

Day 1: Table Game Play (whole group)

- Discuss why we play games.
- Introduce and play the game Number Kicker.

ST Math Puzzles (small group)

Pre-Assessment and/or Pre-Quiz (optional)

Day 2: Table Game Play (whole group)

- Discuss why we play games.
- Introduce and play the game Make Ten Concentration

ST Math Puzzles (small group)

Day 3: Instructional Station Routines

- Establish class Routines

Table Game Play

- Number Kicker or Make Ten Concentration

ST Math Puzzles (small group)

- Have students sign in and play ST Math.



Grade 1 | Module 1 | Day 1

ST Math Immersion Focus (10 minutes)

Introduce ST Math Immersion and its components, and answer any questions the students may have to better prepare them for a successful experience. Introduce the components of the program, including the Problem Solving Journal (which includes My Thinking Path, Problem of the Day (POD), Exit Tickets, and Puzzle Reflections), Puzzle Talks, and Instructional Stations (which includes Small Group Instruction, ST Math Puzzles, and Table Games). There are optional Activity Pages that can also be introduced. Explain how you will be completing the Pre-Assessment and / or Pre-Quiz if you decide to use them.

ST Math Focus (15 minutes)

Your students likely have been playing ST Math. For some of them, this may be their first experience with ST Math. On this first day it is important to reintroduce ST Math while sharing important tips and reminders as students play ST Math. See Slide Deck slides 3–5.

If your class has been using 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 like them.
- Discuss goal setting with students and set a puzzles and minutes goal for this first module.
- 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.
- Ask: "When you do an ST Math puzzle how does the animation help?" Give an example.
 - This is a group discussion. Help students understand that the animation in the puzzle shows them if they are right or wrong. The information provided by this feedback (animation) can be used to adjust their thinking about how to solve the puzzle. As you discuss, allow all students to contribute to answering this question. Create a chart of their responses. Make sure you put their name or initials by their response so that you can compare it at the end of the program to what they learned.

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 \[Spanish\]](#) or show a [video telling the story \[Spanish\]](#) 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 that clicking on the sky makes the clickable parts shimmer.
 - 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?

Problem Solving (20 minutes) - whole group

Engage students in problem solving discussions. Read and discuss the problem, share student work, compare strategies, and make connections.

Problem of the Day (slide 6)

- 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 white board or chart. (You will use this information throughout the module so it is important that it is in a form you can refer back to.)
 - Some questions you may ask to gather data might include: How many students are in this class? How many are girls? Boys? 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?
 - This is a great opportunity to practice counting, making tally marks, and comparing numbers (more/less, bigger/smaller, one more, two more, one less, two less, etc.)

Problem Solving Journal (Page 3, top)

- Students are introduced to the journal and complete together with the class today. In future lessons, the Problem of the Day is intended to be completed independently. They are not included in the Slide Decks.

Preparing for Instructional Stations (45 minutes)

Table Game Play & Discussion (25 minutes, whole group)

- Tell students they are going to play a game. Ask them to share why people play games. Record their responses on chart paper.
- Introduce students to the game Number Kicker.
- Have them play the game with a partner for about 10 minutes.
- Have students individually think about one thing they liked about the game and one thing they didn't like.
- Discuss as a whole group. Ask students to share what they liked/didn't like about the game.
 - Ask questions about the math they used in the game and record answers on chart paper.
 - How did the math work in the game?
 - What was the purpose?

ST Math Puzzles (20 minutes, small group)

Students in small groups will each individually play ST Math Puzzles. You have the option to assign them the entire Immersion objective, have them continue their grade level journey from the previous school year, or assign them specific puzzles. If you do not have enough computers for each student to play ST Math, you can have some students working on ST Math, some continuing to play Number Kicker, and if applicable, others in a small group with the teacher completing the Pre-Assessment and/or Pre-Quiz.

- OR -

OPTIONAL - ST Math Immersion Grade 1 Pre-Assessment and/or Pre-Quiz

Administer the Pre-Assessment and/or Pre-Quiz to students. Those who finish early can play ST Math. This time can also be used to give the Pre-Assessment and/or Pre-Quiz to all students in a whole group setting. Another option would be to administer the assessment to small groups over the course of this first module.



Grade 1 | Module 1 | Day 2

ST Math Focus

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. Show them the [Problem Solving Bookmark](#) and encourage them to refer to it as they play ST Math on their own.

Puzzle Talk: Attribute Transform (20-25 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Provide students with whiteboards/dry erase markers.

Notice and Wonder

- Display Attribute Transform Level 1.
- Introduce and discuss the first Attribute Transform puzzle.
- Tell students you are going to teach them questions they can ask themselves to help think through the puzzles. The first question students should ask themselves is: “What do I notice?”
- Encourage students to complete this sentence: “I notice _____.”
- Have several students share what they notice, not how they would solve it.
- Remind students that they can click the sky, and the clickable elements will shimmer.

Predict and Justify

- The next question students should ask themselves is: “What is my prediction?”
- Encourage students to complete this sentence “My prediction is _____ because_____.”
- Have different students share their predictions and why theirs is the best prediction.
- Ask students to name or describe the strategy they will use to test their prediction. For example, a student may predict that they have to somehow move the shape from one side to the other. In this case they would name the strategy of matching. “My strategy is to change the color of the triangle on the left to match the color of the triangle on the right by selecting the block that has the matching color. ”
- Ask students to describe what they think will happen when you test their prediction and why.

Test and Observe

- Encourage students to observe and think about the results of testing their hypothesis.
- Try a few student suggestions, both correct and incorrect. Watch the feedback, and discuss what they observed.

Analyze and Learn

- Facilitate students in analyzing the feedback/results an understanding what worked and didn't work.
 - 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.
- Use the annotation tools to highlight the learning.

Connect and Extend

- Do one example of each: changing color (Level 1), changing shape (Level 2), stretching (Level 3).
- Help students use what they've learned to solve new puzzles.
- Discuss strategies and solutions (including incorrect ones). Explore different solutions, and discuss what they thought would happen vs. what did happen.
- Have students create their own Attribute Transform puzzle and share it with a neighbor. Can their neighbor correctly solve it? Choose a few to share with the whole group. See who can make the most challenging one, the most unique one, the most surprising one, etc.

How does the student:

- 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?

Problem Solving (20-25 minutes)

Engage students in problem solving discussions. Read and discuss the problem, share student work, compare strategies, and make connections.

Problem of the Day (slide 8)

- Remind students about yesterday's Problem of the Day. How can we describe the class mathematically? Generate a list of three to five things students want to know about each other, such as:
 - Favorite ice cream flavor, favorite color, number of siblings, number of pets, favorite subject in school, month of birth, favorite sport, etc.

Problem Solving Journal (page 3, bottom)

- Students complete together with the class today.

Preparing for Instructional Stations (45 minutes)

Table Game Play & Discussion (25 minutes, whole group)

- Discuss the game that the students played yesterday, Number Kicker. Review what they liked/didn't like about the game. Ask questions such as: How did they figure out who won? Did they have a strategy that would help them win?
 - Let students know that they are going to play a different game today.
 - Introduce students to Make Ten Concentration.
 - Have them play the game with a partner.
- Discuss as a whole group. Ask students to share what they liked/didn't like about the game. Ask questions about the math they used in the game, and record answers on chart paper.
 - How did the math work in the game?
 - What was the purpose of the math?
- Show them the game chart from yesterday. Have them think about Number Kicker and Make Ten Concentration. Discuss their answers to the questions:
 - Which game did they like better? Why?
 - How was mathematics involved in each of these games?

ST Math Puzzles (20 minutes, small group)

Students in small groups will each individually play ST Math Puzzles. You have the option to assign them the entire Immersion objective, have them continue their grade level journey from the previous school year, or assign them specific puzzles. If you do not have enough computers for each student to play ST Math, you can have some students working on ST Math, some continuing to play Number Kicker, and if applicable, others in a small group with the teacher completing the Pre-Assessment and/or Pre-Quiz.



Grade 1 | Module 1 | Day 3

My Thinking Path (5-10 minutes)

Students will begin solving problems involving addition and subtraction within 100. They will write equations to represent the problems, including equations with a symbol for the unknown.

My Thinking Path Discussion:

- Introduce the My Thinking Path page in their Problem Solving Journal to students (page 2). Have them write in the topic, "Adding and subtracting numbers."
- Have students begin working on completing the page.
- Discuss their ideas, and allow students to add to their paper any additional thoughts they have.
- From today on, begin each of Days 1–4 with time for students to reflect on their learning and to prepare for the day.

Puzzle Talk: Bouncing Shoes (20-25 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Provide students with [Creature Cards](#) and whiteboards/dry erase markers.

Notice and Wonder

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

Predict and Justify

- Have students make a prediction and determine a strategy for solving the puzzle. Have students share their predictions about what they think will happen and why. Do they agree or disagree with each other's strategies?

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 the feedback together in both correct and incorrect solution, sharing observations.

Analyze and Learn

- Ask students to think about how what they saw happen compares to what they thought would happen: "Are there any other solutions to this puzzle? Can we choose different creatures to add together?"
- Display the first puzzle from Level 2, discussing how they are different from Level 1.
- Say to students, "How could we fill the shoes using the creatures in this puzzle?"
- Have students share how they would solve the puzzle with a partner, and then do a whole group share out.

Connect and Extend

- Display the first puzzle in Level 3, asking students how these puzzles are different from Levels 1 and 2. "Are there different creatures we can use to fill the shoes? If so, how many creatures do we need?"
- Ask students: "Can we represent this puzzle using an equation? What does the equal sign mean?" On their whiteboards or paper, have students write equations to represent the solutions (i.e., 2 ostriches = 1 dog or 2 + 2 = 4)
- Final check for understanding: Write an equation on the board to show that two different solutions are equal (e.g., $4 + 3 = 2 + 5$), and ask students: "Is this equation true? Explain how you know."
- You may repeat with the remaining puzzles in Level 3.

How does the student:

- understand the relationship of addition and subtraction?
- solve a start-unknown equation?
- solve a change-unknown equation?
- explain the purpose of an unknown/variable?

Problem Solving (20-25 minutes)

Engage students in problem solving discussions. Read and discuss the problem, share student work, compare strategies, and make connections.

Problem Solving Slide Deck (slides 11–12)

- JiJi has some shoes to give to friends.
- JiJi has 12 shoes. Which friends can JiJi give shoes to?
 - Is there another way JiJi could give shoes away?
 - Write an equation to show that these two solutions are equal.
 - Can JiJi give shoes to more than two friends?
 - Write the equation for this solution.

Problem Solving Journal (page 4, top)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Which creatures can wear 10 shoes?
 - Allow students to find as many solutions and possible. Encourage them to write the equations.

Preparing for Instructional Stations (40 minutes)

Students will visit two stations today (15 minutes per station). See Instructional Station Overview.

Instructional Station Routines (10 minutes)

- It is important to establish routines for station rotation that allow students to seamlessly move from one station to another with little disruption. Beginning with module 2, there are 3 stations. For today, have students rotate only between the stations below while you monitor the students. Allow for 15 minutes at each station. Consider these tips as you set up stations with your class.
 - Communicate clear expectations to students.
 - Provide clear directions and ensure that students have all the materials they need.
 - Make sure math tools are accessible to students.
 - Set a timer to help students pace themselves.
 - Provide strategies for students who need help during instructional station time.
 - Be sure to consider movement in high traffic areas during transition time.
 - Consider giving students' roles in the group to support accountability and collaboration.

Station 1: ST Math Puzzles

- Have students sign in and play ST Math puzzles.
- Remind students to use manipulatives and/or paper and pencil to help them solve problems.
- With 5 minutes left, have students stop playing and complete their Puzzle Reflection and [Accomplishments Log](#).

Station 2: Table Games

- Select Number Kicker or Make Ten Concentration.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.



Grade 1 | Module 1 | Day 4

My Thinking Path (5-10 minutes)

- Have students reflect on what they have learned about solving problems involving addition and subtraction of whole numbers. They should complete page 5 in their Problem Solving Journal.

Puzzle Talk: Bouncing Shoes with Numbers (20-25 minutes)

- Focus on student thinking and developing problem solving skills using the guiding questions in each step of the Problem Solving Process.
- Provide students with Creature Cards and whiteboards/dry erase markers.

Notice and Wonder

- Show a puzzle from Level 1. Ask students: “What do you notice? What do you wonder?” Allow students to share. Provide Creature Cards.

Predict and Justify

- Have students make a prediction and determine a strategy for solving the puzzle. Students may tell you which creatures to choose or write an equation. Have students share their predictions about what they think will happen and why.
- Have students share their strategies and discuss whether or not they agree/disagree with each other.

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 the feedback in both correct and incorrect solutions.)
- Watch the feedback together and discuss what you saw.

Analyze and Learn

- Ask students to think about how what they saw happen compares to their prediction.
- Pull up the next puzzle. (It may have more than one correct answer.) Discuss what students notice and their strategies for solving the puzzle.
- Share students’ answers, and try one. Ask students: “Is there another correct answer? What could it be?” Have students share a different correct answer for this puzzle.
- Repeat with the remaining puzzles in Levels 1 and 2. Ask students to write equations to represent their answers.

Connect and Extend

- Display the first puzzle in Level 3, asking how these compare to Levels 1 and 2.
- Discuss what the numbers represent and how the puzzle would look without the numbers.
- Ask what they know in the puzzle and what they do not know in the puzzle (what they are solving for).
- On some puzzles, students may write two expressions that could be used to solve the puzzle and show them as an equation.
- Ask if this equation is true (e.g., $4 + 1 = 1 + 4$) or you may choose to write two expressions that reflect current puzzle. How do we know this is true?
- Repeat with the remaining puzzles in Level 3.

How does the student:

- understand the relationship of addition and subtraction?
- solve a start-unknown equation? Solve a change-unknown equation?
- explain the purpose of an unknown/variable?

Problem Solving (20-25 minutes)

Engage students in problem solving discussions. Read and discuss the problem, share student work, compare strategies, and make connections.

Problem Solving Slide Deck (slides 15–19)

- Students will find the missing number to complete the mathematical equation and show their solutions as jumps on the number line.

Problem Solving Journal (page 4, bottom)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Students will find the missing number to complete the mathematical equation and show their solutions as jumps on the number line.

Whole Group Table Games (15-20 minutes)

During this time you will introduce Addition War and Pyramid Make Ten. Students will play these games in the next module in Station 3.

- Introduce one of the games.
- After explaining the game and playing it with the whole group, give students time to play it on their own.
- After playing the game, have them discuss:
 - What math did they learn or use?
 - What strategies did they try to win the game?
- Repeat with the second game.

Optional Activity Page (15-20 minutes) - whole group

ST Math Activity Page

- Have students complete the "Welcome to the ST Math Activity Booklet" page.
- Project the ST Math game *Bouncing Shoes*.
- Play a few puzzles to help students understand the game.
- Have students turn to the Activity Page: *Bouncing Shoes*.
- Ask students what they notice about the content on the page. What do they wonder? Where do they want to start on the page?
- Give them time to complete the page.
- Discuss the page and have students share their thinking.
- Take the time to compare strategies, and have students share their work.
- Make connections to the game.

Closing (10 minutes)

Thinking and Reflecting Time

- Have students complete the Post-Quiz (optional).
- Have students review their Problem Solving Journal work including their Puzzle Reflection, Exit Tickets, and Problem Solving work.
- Engage students in discussions about what they have learned in this module, what they have questions about, and what they would like to learn more about.