



## Grade 1 | Module 5

### Topic: Relationship between addition and subtraction

Module 5 Resources

Students use the relationship between addition and subtraction to solve problems.

### Module 5 at a Glance

#### Printed Resources

- **Bookmarks**
  - Problem Solving Process Bookmark
  - Problem Solving Facilitation Bookmark
- **Problem Solving Journal** (pages 29-31)
  - My Thinking Path
  - Problem of the Day
- **Mini-Math Game Design Booklet**
- **ST Math Immersion Debriefing Bookmark**
- **Learning Showcase & Celebration Invitation**

#### Optional Printed Resources

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

#### Teacher Resources

- Teacher Planner
- Reflection Poster Guide
- Mini-Math Game Design Guide
- Learning Showcase and Celebration Guide

#### Immersion Slide Deck (slides 76–91)

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

#### Supplies needed for students

- 1 poster board or large sheet of construction paper per student.
- Various supplies to create Mini-Math Game.

### My Thinking Path

- This module, students reflect on the relationship between addition and subtraction to solve problems.

### ST Math Puzzle Talks

- Missing Addend

### Problem Solving

*Note: Students will only complete Problem Solving on Day 1 & Day 2 of this module.*

#### Day 1:

- **Problem Solving Slide Deck** - There are ducks in the pond. Some ducks are white and some ducks are yellow. If there are 10 ducks in the pond, how many could be white and how many could be yellow?
- **Problem Solving Journal** - Students will solve missing addend problems.

#### Day 2:

- **Problem Solving Slide Deck** - Dot is on a number line. Show me all the ways I can get to 10 in two jumps.
- **Problem Solving Journal** - Students will solve a number line problem.

## Instructional Stations

Students will only have Instructional Stations on Day 1 & 2 of this module and will only have 2 stations. Use this time to give the Post-Assessment and/or Quizzes. They should rotate through both stations each day.

### Station 1: Small Group Instruction

- Administer the Post-Assessment and/or Quizzes.
- Students will review Problem Solving Journal.
- Begin discussion around Reflection Poster and Mini-Math Game Design.

### Station 2: 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 Accomplishments Log.

## Day 3 Thinking and Reflecting Time

### PART 1: Reflection Poster

- Students are going to create a [poster](#) that represents the learning they have gained. The poster should reflect how their thinking and understanding has grown. It should be an opportunity for students to show what they know.
- Work with students to review the thinking they have recorded in their Problem Solving Journal (My Thinking Path, Problem of the Day, Exit Tickets, and ST Math Puzzle Reflections) and discuss what they have learned during Immersion.

*The reflection poster is best done as a small group project because that allows students to engage in higher order thinking skills (e.g., evaluating their learning and the ideas of others, synthesizing their thoughts and the thoughts of others, reaching consensus, and working together). It can however, be done as an individual project.*

### PART 2: Mini-Math Game Design

- Students will create a game similar to the Table Games they have played throughout the program.
- Use the slide deck and Mini-Game Design Booklet to guide students through the process. They will begin with brainstorming games they are familiar with and end by working in small groups to create a game.

## Day 4 Learning Showcase and Celebration

*The [Learning Showcase and Celebration](#) occurs on the final day of ST Math Immersion. It will serve as a time for students to showcase their learning. It will also serve as a debrief as students share their projects and respond to questions from those attending the event.*

- Parents, board members and community partners can be [invited to attend](#). This is a great opportunity for students to showcase their learning from the Immersion program.
  - Provide students time to make any final adjustments to their game and notes for the presentation of their games.
  - Have groups present their posters and introduce their games to the class.
  - Provide an opportunity for the students to play each other's games.
  - Provide each visitor with an [Immersion Debriefing Bookmark](#) of questions to ask the students.



## Grade 1 | Module 5 | Day 1

### My Thinking Path (5-10 minutes)

- Have students write in the topic, "Relationship between adding and subtracting."
- Have students complete the My Thinking Path page in their Problem Solving Journal.
- Discuss their ideas, and allow students to add to their paper any additional thoughts they have.
- Have students complete the Pre-Quiz (optional).

### Puzzle Talk: Missing Addend (20-25 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.

#### 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 about what they think will happen and why.
- Have students share out. Do they agree or disagree with each other's strategies.

#### Test and Observe

- Test out one student's strategy. 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.

#### Connect and Extend

- Display another puzzle from Level 1, and have students create an equation that could represent the puzzle. Make sure they are including a letter or symbol for the unknown.
- Share students' equations, and discuss strategies for finding the unknown. (For example, if the puzzle shows  $? + 2 = 5$ , students could count on from 2 to get to 5, use the problem  $5 - 2 = ?$ , etc.) Solve the puzzle and repeat with other puzzles in Level 1.
- After playing a few puzzles, teach students the term *commutative property* by using the animation in the puzzles to prove that order doesn't matter when you add.
- Before showing puzzles in Level 2, have students record 1 combination of 2 numbers that add up to 6, 7, 8, and 9 (one combination for each number), and ask: "Are there more combinations of numbers to make this whole?" For example, students may write  $5 + 1$ ,  $4 + 3$ ,  $4 + 4$ , and  $3 + 6$ .
- Show three to four puzzles from Level 2. Say to students: "Now we will play a game. When we see a puzzle in Level 2, if you have the combination that is represented in the puzzle, do a silent thumbs up or cheer."
- Discuss and record other combinations of numbers that could be placed on top of the bottom number.
- Choose a puzzle in Level 2. Pause the puzzle before JiJi gets all of the way across. Say to students: "JiJi just walked over a part-part-whole model of this puzzle. These numbers form a number bond (or fact family). We can use the numbers in a number bond (or fact family) to create two addition and two subtraction equations."
- Have students write addition and subtraction equations to represent the puzzle. Share out as a whole group.

### How does the student:

- represent the puzzle with an equation?
- identify the unknown in the puzzle?
- explain the commutative property of addition?
- understand the relationship between addition and subtraction?
- use number bonds (or fact families) to solve for the unknown?

## 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 79–80)

- There are ducks in the pond. Some ducks are white and some ducks are yellow. If there are 10 ducks in the pond, how many could be white and how many could be yellow?

### Problem Solving Journal (page 30, top)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Students will solve missing addend problems.

## Instructional Stations (40 minutes)

*Students will visit both stations today (20 minutes per station). Instructional Stations will only take place on the first two days of this last module.*

### Station 1: Small Group Instruction

- Work with students going through their journals, My Thinking Path, Exit Tickets, PODs, Puzzle Reflection, etc., and discuss what they have learned during Immersion.
- Discuss major concepts and vocabulary they learned and used during ST Math Immersion.
- Have students add to their journal as you discuss things they have learned but may have not yet included in their journal.
- This will prepare the students to complete their Reflection poster on Day 3.

### Station 2: 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 Accomplishments Log.



## Grade 1 | Module 5 | Day 2

### My Thinking Path (5-10 minutes)

- Have students reflect on what they have learned about using the relationship between addition and subtraction to solve problems. They should complete the My Thinking Path reflection page.

### Puzzle Talk: Missing Addend (20-25 minutes)

- Provide students with whiteboards/dry erase markers.

#### Notice and Wonder

- Show a puzzle from Level 3. (All of these are combinations to 10.) 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.
- Do a student share out. Ask the students to think about if they agree/disagree with the strategy and why.

#### Test and Observe

- Try a student's solution. Watch the feedback together, and discuss what they saw.

#### Analyze and Learn

- Ask students to think about how what they saw happen compares to their prediction. What did they learn from the feedback? Be sure to analyze the feedback in both correct and incorrect solutions.
- After showing the first puzzle, tell students that the puzzles in this level are all combinations to 10.

#### Connect and Extend

- Have them draw a Tic-Tac-Toe board on paper or on their whiteboards before you continue.
- Have them place an expression in each of the nine cells that is a possible combination to make 10.
- Explain that the order will matter. For instance, if they have  $3 + 7$  and a puzzle shows 7 first and then 3, they cannot mark that cell. As you show the puzzles, have students put an X through the combinations, if they have it.
- If there is extra time, play the Bingo game as you solve the puzzles.
- If no one has bingo by the end of the game, go out of and back into that level and play again. NOTE: If someone gets bingo really fast, tell students they need to get two rows or even blackout.

#### How does the student:

- represent the puzzle with an equation?
- identify the unknown in the puzzle?
- explain the commutative property of addition?
- understand the relationship between addition and subtraction?
- use number bonds (or fact families) to solve for the unknown?

## 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 79–80)

- Dot is on a number line. Show me all the ways I can get to 10 in two jumps.

### **Problem Solving Journal** (page 30, bottom)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Students will solve a number line problem.

## Instructional Stations (40 minutes)

*Students will visit both stations today (20 minutes per station). Instructional Stations will only take place on the first two days of this last module.*

### **Station 1: Small Group Instruction**

- Hand out the Post-Assessment and/or Post-Quiz to students.
- Begin a discussion about the Reflection Poster and the Mini-Math Game Design students will be doing on Day 3.
- This would be a good time to let students know that they are going to create a math game.
- Begin the Design Process in small group.
- Take a look at the [Mini-Math Game Design Guide](#).

### **Station 2: 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 Accomplishments Log.



## Grade 1 | Module 5 | Day 3

### Reflection Poster (30 minutes)

Students are going to create a [Reflection Poster](#) that represents the learning they have gained. The poster should reflect how their thinking and understanding has grown. It should be an opportunity for students to show what they know.

- With the whole class, brainstorm a list of all the things they have learned this summer. Record their ideas on chart paper.
- Discuss major concepts and vocabulary they learned and used during Immersion.
- Work with students to review the thinking they have recorded in their journals (My Thinking Path, Exit Tickets, PODs, Puzzle Reflection) and discuss what they have learned during Immersion.
- Have students add to their journal as you discuss things they have learned but may have not yet included in their journal. This will prepare the students to complete their poster.
- Ask students to work with their group to see what they might want to include on their poster.
- Instruct groups to make their posters colorful, interesting and informative so students in other classes will see what they have accomplished in the past few modules.
- Give students time to work on their posters.
- The posters will be displayed for the entire school and parents to see on Day 4.

*The reflection poster is best done as a small group project because that allows students to engage in higher order thinking skills (e.g., evaluating their learning and the ideas of others, synthesizing their thoughts and the thoughts of others, reaching consensus, and working together). It can however, be done as an individual project. Have students think about all of the things that they have learned and make a poster to share what they have learned.*

### Mini-Math Game Design (50 minutes) - whole group

#### Design Process (20 minutes)

See [Mini-Math Game Design Guide](#).

During this time, students will be creating their own game. Display the slide deck and have them complete the Mini-Math Game Design Booklet to guide them through the process.

- Brainstorm a list of games they have played. Include both the Table Games in Immersion and any other board game they are familiar with. Record the list on a whiteboard or chart paper and on page 2 in the Mini-Math Game Design Booklet.
- Take the opportunity to discuss the games that students have learned to play. Compare and contrast the games and share opinions, strategies, and experiences. Discuss the impact any of the games have had on the games students are designing.
  - Number Kicker
  - Make Ten Concentration
  - Addition War
  - Pyramid Make Ten
  - Tic-Tac-Ten
  - Number Path Race
  - Addition Connect Four
  - Three Cards Make Ten
  - JiJi Sudoku
- When thinking about the game they would like to design, ask students what math concepts they will include.

## Mini-Math Game Design (continued)

### Making the Game (30 minutes)

During this time, students will be creating a game.

- When thinking about the game they would like to design, ask students what math concepts they will include.
- As students are designing their game, they should decide on a game name and directions and rules for their game.
- Students will work in small groups to create a game. Provide them with the supplies needed. The list below are samples of items that could be used.
  - Dice or number cubes
  - Construction paper
  - Scissors
  - Poster board
  - Manila folders
  - Index Cards
  - Egg cartons
  - Water bottles
  - Pizza circles
  - Paper towel rolls
  - Buttons
  - Other creative items
- Once students have a game created, they should test it out with their classmates and make any changes needed. They should complete page 3 in the Mini-Math Game Design Booklet.
- The students will be presenting their games at the Learning Showcase and Celebration on Day 4. They will be given the opportunity to play games with the guests.

### Prepare for Tomorrow (10 minutes)

- Discuss what students will need to do tomorrow during the Showcase. Include details about:
  - Organizing games and displays
  - Setting up posters
  - Expectations for the day





## Grade 1 | Module 5 | Day 4

### Learning Showcase and Celebration (Final Day of Program)

Parents, board members and community partners can be [invited](#) to attend. This is a great opportunity for students to showcase their learning from the Immersion program.

- Provide students time to make any final adjustments to their game and notes for the presentation of their games.
- Have groups present their Reflection Posters and introduce their games to the class.
- Provide invited guests a copy of the [Immersion Debriefing Bookmark](#). They should ask students those questions as they visit with each group.
- Provide an opportunity for the students to play each other's games.
- Reflection Poster Gallery Walk (See [Learning Showcase and Celebration Information](#)).

### Optional Activity Pages

#### ST Math Activity Pages

Students will have one final activity page left in their Activity Pages. Encourage students to keep practicing their math skills by continuing to play ST Math Puzzles at home and by completing this final activity page.

### Closing

#### Thinking and Reflecting Time

- Have students complete the Post-Quiz (optional).
- Engage students in discussions about what they have learned this summer, what they have questions about, and what they would like to learn more about.