



## Grade 1 | Module 4

### Topic: Find the unknown number in an addition or subtraction equation

[Module 4 Resources](#)

Students work with puzzles to develop their understanding of finding the unknown number in an addition or subtraction equation. Students will solve problems where one or more numbers is missing. They will work to understand the purpose of the equal sign.

### Module 4 at a Glance

#### Printed Resources

- **Bookmarks**
  - Problem Solving Process Bookmark
  - Problem Solving Facilitation Bookmark
- **K-2 Table Games Directions**
  - Addition Connect Four
  - Three Cards Make Ten
  - *Tic-Tac-Ten (optional)*
  - *Number Line Race (optional)*
  - *Addition War (optional)*
  - *Pyramid Make Ten (optional)*
  - *Number Kicker (optional)*
  - *Make Ten Concentration (optional)*
  - JiJi Sudoku (Day 5)
- **Game Mat**
  - Critter Addition Game Mat
- **Problem Solving Journal** (pages 22–28)
  - My Thinking Path
  - Problem of the Day
  - Exit Tickets
  - ST Math Puzzle Reflections
- **Design Challenge Booklet** (pages 15–16)

#### Optional Printed Resources

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

#### Immersion Slide Deck (slides 58–75)

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

#### Teacher Resources

- Teacher Planner

#### Supplies for Table Games (per group)

- **Addition Connect Four** - 2 paper clips, 2 different color chips (20 of each color), 1 copy of the Addition Connect Four Game Mat
- **Three Cards Make Ten** - 1 deck of cards with face cards removed.

### My Thinking Path

- This module, students reflect on finding the unknown in an addition or subtraction equation.

### ST Math Puzzle Talks

- Critter Addition
- Critter Addition Symbolic

## Problem Solving

### Day 1:

- **Problem Solving Slide Deck** - JiJi is playing a video game. In order to win the game, JiJi needs 30 points. In Level 1, JiJi scored 10 points. In Level 2, JiJi scored 14 points. How many more points does JiJi need?
- **Problem Solving Journal** - Students will solve a video game problem.

### Day 2:

- **Problem Solving Slide Deck** - Connie was catching fireflies. Last night, Connie caught 15 fireflies. This morning, some of them flew away. Now there are 7 fireflies. How many flew away?
- **Problem Solving Journal** - Students will solve a critter addition and a critter subtraction problem.

### Day 3:

- **Problem Solving Slide Deck** - I am collecting animal cards. I have 6 elephant cards and 2 snake cards. I have 20 cards altogether. How many dolphin and turtle cards could I have?
- **Problem Solving Journal** - Students will solve an animal card problem.

### Day 4:

- **Problem Solving Slide Deck** - JiJi is making pancakes. JiJi made 4 pancakes in the first batch and 4 pancakes in the second batch. In the last batch, JiJi made 6 pancakes. How many pancakes did JiJi make? JiJi made 14 pancakes. Paco and Robot each ate 4 pancakes. How many pancakes are left?
- **Problem Solving Journal** - Students will solve a fishing game problem.

## Instructional Stations

*On Days 1–4, each student will visit two stations a day for 20 minutes each. On Day 5, students do not rotate. They can either be assigned to a station or choose which one to go to. Consider assigning students who need additional support to Station 1 to work with the teacher on concepts they are struggling with.*

### Station 1: Small Group Instruction

- Days 1–4: Engage students in a math conversation about math concepts using a rich problem.

### 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 Puzzle Reflection and Accomplishments Log.

### Station 3: Table Games

- Select Addition Connect Four or Three Cards Make Ten.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.

### Station 4: Design Challenge

- Days 1–4: Students will continue to make changes to their games and finalize their rules and directions.

### Day 5: Design Challenge (whole group)

- Have the students test their games with the other students, get feedback, and then see what additional improvements they need to do to improve their games.
- As students are playing games, monitor student game play and use facilitation questions to help support their thinking about games and about math.



## Grade 1 | Module 4 | Day 1

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

- Have students write in the topic, “Finding the unknown number.”
- Have students begin working their My Thinking Path journal page.
- 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: Critter Addition (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 a [Critter Addition Game Mat](#) 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.

#### 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. Ask the students to think about if they agree/disagree with the strategy and 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 the feedback in both correct and incorrect solutions, discussing what you saw.

#### Analyze and Learn

- Ask students: “Are we adding or subtracting the critters? How do you know?”
- Display the next puzzle, and talk about what students see.
- Discuss the two groups of critters shown as well as the plus sign and equal sign. Ask: “What does the + sign tell us about what to do next? What is the solution to this problem?”
- Display another puzzle in Level 1 that has a dot arrangement for 5 next to the critter stack. Discuss how benchmarks of 5 and 10 could help with addition and subtraction problems.

#### Connect and Extend

- Solve additional puzzles from Level 1.
- Give students Critter Addition Game Mats, and have them model the puzzle and their predictions and solution strategies.
- Discuss what is known and unknown in each puzzle through the Problem Solving Process.
- Ask students: “Can you write an equation to represent your new critter stack?” Have students record an equation to represent each puzzle on their game mat, paper, or whiteboards and share these equations.
- Display the first puzzle from Level 2. Ask students how this puzzle is different, and have them write equations, emphasizing that an unknown can be represented by a letter, shape, or symbol.
- Have students write the equations on their game mat, paper, or whiteboards and then share whole group.
- Repeat with additional puzzles in Level 2.

### How does the student:

- discuss how the arrangement of critters (stacks of 10 with 5 marked) in the puzzle helps with addition and subtraction?
- discuss using benchmarks of 5 and 10 to help add and subtract?
- write equations to represent the puzzles and include a symbol for the unknown in the problem?
- discuss what is known and unknown in the problems?

## 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 61–62)

- JiJi is playing a video game. In order to win the game, JiJi needs 30 points. In Level 1, JiJi scored 10 points. In Level 2, JiJi scored 14 points. How many more points does JiJi need?

### Problem Solving Journal (page 23, top)

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

## Instructional Stations (40 minutes)

*Students will visit two stations today (20 minutes in each station). They will visit the other two tomorrow.*

### Station 1: Small Group Instruction

- Give students problems with different problem situations. Discuss the journal questions.
- For example, Juanita quickly found the sum of several different numbers that were added to 9 (e.g.,  $2 + 9$ ;  $6 + 9$ ;  $9 + 9$ ). When she quickly said that  $8 + 9 = 17$ , her friend asked her how she got the answer so quickly. Juanita said, “I know because 17 is one less than 18 and  $8 + 10 = 18$ .” What strategy did Juanita use to add 9? What would Juanita say to add  $9 + 7$ ?
- Have students solve the problems. Allow students to draw pictures or use math tools to help them understand the strategy.

### 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 Puzzle Reflection and Accomplishments Log.

### Station 3: Table Games

- Select Addition Connect Four or Three Cards Make Ten.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.

### Station 4: Design Challenge

- Have students continue to build their games.
- Once they have finished, they will play each other's games to test them out. Have students complete page 14 in the Design Challenge Station Booklet.
- After they test their games, students can make any changes to their games they see are needed. The goal is to have them done.
- If students are done, have them turn to page 16 in their Design Challenge Station Booklet and create a poster about their game.



## Grade 1 | Module 4 | Day 2

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

- Have students reflect on what they have learned about finding the unknown number in an addition or subtraction equation.

### Puzzle Talk: Critter Addition (20 -25minutes)

- Focus on student thinking and developing problem solving skills using the guiding questions in each step of the Problem Solving Process.
- Provide students with a Critter Addition Game Mat (optional) and whiteboards/dry erase markers.

#### Notice and Wonder

- Show a puzzle from Level 3. Ask students: “What do you notice that is similar/different from the puzzles we did yesterday?” 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.

#### Test and Observe

- Try a student's solution, and watch the feedback together. 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.
- Project a puzzle from Level 3, and follow the same procedure as yesterday. Continue writing equations and talking about what is known and unknown in the puzzles. Some questions to ask: What is the known and unknown in this puzzle? How can you use the benchmarks of 5 and 10 to solve this problem?

#### Connect and Extend

- Show puzzles from Level 4.
- Discuss the equation students could write for these problems (making sure there is a symbol to represent the unknown), and have students share out their own equations. Additional prompts to extend thinking: How can you prove your answer is correct?

#### How does the student:

- discuss how the arrangement of critters (stacks of 10 with 5 marked) in the puzzle helps with addition and subtraction?
- discuss using benchmarks of 5 and 10 to help add and subtract?
- write equations to represent the puzzles and include a symbol for the unknown in the problem?
- discuss what is known and unknown in the problems?

## 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 65–66)

- Connie was catching fireflies. Last night, Connie caught 15 fireflies. This morning, some of them flew away. Now there are 7 fireflies. How many flew away?

### Problem Solving Journal (page 23, bottom)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Students will solve a critter addition and a critter subtraction problem.

## Instructional Stations (40 minutes)

Students will visit the two stations they did not visit yesterday (20 minutes in each station).

### Station 1: Small Group Instruction

- Give students problems with different problem situations. Discuss the journal questions.
- For example, Juanita quickly found the sum of several different numbers that were added to 9 (e.g.,  $2 + 9$ ;  $6 + 9$ ;  $9 + 9$ ). When she quickly said that  $8 + 9 = 17$ , her friend asked her how she got the answer so quickly. Juanita said, “I know because 17 is one less than 18 and  $8 + 10 = 18$ .” What strategy did Juanita use to add 9? What would Juanita say to add  $9 + 7$ ?
- Have students solve the problems. Allow students to draw pictures or use math tools to help them understand the strategy.

### 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 Puzzle Reflection and Accomplishments Log.

### Station 3: Table Games

- Select Addition Connect Four or Three Cards Make Ten.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.

### Station 4: Design Challenge

- Have students continue to build their games.
- Once they have finished building their games, they will play each other's games to test them out. Have students complete page 14 in the Design Challenge Station Booklet.
- After they test their games, students can make any changes to their games they see are needed. The goal is to have them done so other students can play their games on Day 5 to test them out.
- If students are done, have them turn to page 16 in their Design Challenge Station Booklet and create a poster about their game.



## Grade 1 | Module 4 | Day 3

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

- Have students reflect on what they have learned about finding the unknown number in an addition or subtraction equation.

### Puzzle Talk: Critter Addition Symbolic (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 a Critter Addition Game Mat (optional) and whiteboards/dry erase markers. Manipulatives may also be helpful to students.

#### Notice and Wonder

- Show a puzzle from Level 1. Ask: "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 them share out and explain why they chose their strategy. When they do share, encourage students to agree/disagree and discuss how it relates to their own.

#### 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.
- Display another puzzle from Level 1. Ask students what each part of the puzzle represents. Discuss what the number by each critter represents and ask students: "How is this different from the other Critter Addition puzzles we worked on? How do we know how many critters we have to start with in this puzzle?"

#### Connect and Extend

- Discuss the known and unknown in this puzzle. In pairs, have students find how many critters were added to the first group to get the sum.
- Have students write the puzzle as an equation with a letter/symbol to represent the unknown ( $4 + ? = 9$ ).
- Have pairs do a share out of their solutions. Ask: "How many tens does your answer have? How do you know?"
- Solve the puzzle, and repeat with additional puzzles in Level 1.

#### Level 2

- Show a puzzle from Level 2. Have students discuss what they notice with a partner about how it is different from Level 2. "The puzzles in Level 1 had the second number (or the change) unknown. What is the unknown in this puzzle?"
- Have students work to solve the puzzle together, sharing their strategies and equations with the whole class.
- Repeat with additional puzzles in Level 2.

#### How does the student:

- write and discuss equations with a symbol for the unknown?
- write addition and subtraction equations to represent the puzzles?
- understand the commutative property of addition?
- write different combinations to make the number?
- understand the relationship of addition and subtraction?

## 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 69–70)

- I am collecting animal cards. I have 6 elephant cards and 2 snake cards. I have 20 cards altogether. How many dolphin and turtle cards could I have?

### Problem Solving Journal (page 24, top)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Students will solve an animal card problem.

## Instructional Stations (40 minutes)

Students will visit two stations today (20 minutes in each station). They will visit the other two tomorrow.

### Station 1: Small Group Instruction

- Give students problems with different problem situations. Discuss the journal questions.
- For example, Delita and Quincy played a game three times. Delita scored 6 points in the first game, 6 points in the second game and 10 points in the third game. Quincy scored 5 points in the first game, 9 points in the second game and 9 points in the third game. Who had the most points after three games? Explain how you determined your answer.
- Ask other problems like this with different sets of numbers (e.g., 4, 8, 5 and 7, 6, 5; 7, 8, 7 and 9, 7, 7; 4, 6, 8 and 3, 7, 8) to get students to look for relationships between the numbers so they do not need to do all of the computation.
- Have students write an equation and use a symbol to represent what is unknown in the problems.
- Discuss what they know in the problem and what they need to know to solve the problem.
- Bring the discussion about each problem to the equation and discuss what each of the numbers in the equation represents.
- Have students use a symbol such as a box to represent what is unknown in the problem.

### Station 3: Table Games

- Select Addition Connect Four or Three Cards Make Ten.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.

### 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 Puzzle Reflection and Accomplishments Log.

### Station 4: Design Challenge

- Have students continue to build their games.
- Once they have finished building their games, they will play the games as a group to test them out. Have students complete page 14 in the Design Challenge Station Booklet.
- After they test their games, students can make any changes to their games they see are needed. The goal is to have them done so other students can play their games on Day 5 to test them out.
- If students are done, have them turn to page 16 in their Design Challenge Station Booklet and create a poster about their game.





## Grade 1 | Module 4 | Day 4

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

- Have students reflect on what they have learned about finding the unknown number in an addition or subtraction equation. They should complete the My Thinking Path reflection page.

### Puzzle Talk: Critter Addition Symbolic (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 whiteboards/dry erase markers. Manipulatives may also be helpful to students.

#### Notice and Wonder

- Show a puzzle from Level 3. Ask students: "What do you notice that is similar/different from the puzzles we did yesterday.?" 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. Try one of the strategies.

#### Test and Observe

- 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
- Project another Level 3 puzzle, and follow the same Problem Solving Process as yesterday's with the previous levels in Critter Addition Symbolic.
- Continue writing equations and talking about what is known and unknown in the puzzles.

#### Connect and Extend

- Show puzzles from Level 4.
- Discuss the equation students could write for these problems.
- Check to make sure students are including symbols for the unknown in the equation.
- Have students write the equations on paper or a white board and then share whole group.
- Select another puzzle from Level 4 for the students and have them work in pairs to create a problem story.
- Share several stories with the whole group, and ask: "What would that story look like if a different part was unknown?"

#### How does the student:

- write and discuss equations with a symbol for the unknown?
- write addition and subtraction equations to represent the puzzles?
- understand the commutative property of addition?
- write different combinations to make the number?
- understand the relationship of addition and subtraction?

## 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 73–75)

- JiJi is making pancakes. JiJi made 4 pancakes in the first batch and 4 pancakes in the second batch. In the last batch, JiJi made 6 pancakes. How many pancakes did JiJi make? JiJi made 14 pancakes. Paco and Robot each ate 4 pancakes. How many pancakes are left?

### Problem Solving Journal (page 24, bottom)

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

## Instructional Stations (40 minutes)

Students will visit the two stations they did not visit yesterday (20 minutes in each station).

### Station 1: Small Group Instruction

- Give students problems with different problem situations. Discuss the journal questions.
- For example, Delita and Quincy played a game three times. Delita scored 6 points in the first game, 6 points in the second game and 10 points in the third game. Quincy scored 5 points in the first game, 9 points in the second game and 9 points in the third game. Who had the most points after three games? Explain how you determined your answer.
- Ask other problems like this with different sets of numbers (e.g., 4, 8, 5 and 7, 6, 5; 7, 8, 7 and 9, 7, 7; 4, 6, 8 and 3, 7, 8) to get students to look for relationships between the numbers so they do not need to do all of the computation.
- Have students write an equation and use a symbol to represent what is unknown in the problems.
- Discuss what they know in the problem and what they need to know to solve the problem.
- Bring the discussion about each problem to the equation and discuss what each of the numbers in the equation represents.
- Have students use a symbol such as a box to represent what is unknown in the problem.

### Station 3: Table Games

- Select Addition Connect Four or Three Cards Make Ten.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.

### 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 Puzzle Reflection and Accomplishments Log.

### Station 4: Design Challenge

- Have students continue to build their games.
- Once they have finished building their games, they will play the games as a group to test them out. Have students complete page 14 in the Design Challenge Station Booklet.
- After they test their games, students can make any changes to their games they see are needed. The goal is to have them done so other students can play their games on Day 5 to test them out.
- If students are done, have them turn to page 16 in their Design Challenge Station Booklet and create a poster about their game.



## Grade 1 | Module 4 | Day 5

### Design Challenge (30-40 minutes)

- Have the students test their games with the other students, get feedback, and then see what additional work they need to do to improve their games.
- Divide the students into groups so there is one person in each group from each team. Rotate the games that the students created through the groups.
- Give students 10-15 minutes to play the game.
- When students are done playing the game, ask them to rate the game using the [Game Tester Report](#). You may want to have some students share their thoughts.
- Rotate the games so each group gets a new game. Have students play that game and then complete a feedback sheet.
- As students are playing games, monitor student game play and use facilitation questions to help support their thinking about games and about math.
- Have students complete the Review Game page for their game, page 15 in Game Design Station Booklet.

### Whole Group Table Games (15-20 minutes)

During this time you will introduce JiJi Sudoku. Students will play these games next module in Station 3.

- Introduce JiJi Sudoku using the simple picture game boards.
- Allow students to work together to solve the picture puzzles.
- If there's time, explain that Sudoku is usually played with numbers and share one or two of the additional numeric Sudoku puzzles.

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

#### ST Math Activity Page

- Project the game *Critter Addition*.
- Play a few puzzles to help students understand the game.
- Have students turn to the Activity Page: *Critter Addition*.
- 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.

## Focused Instructional Time (20 minutes)

### Focused Instructional Time

- During this station time, students do not rotate. They can either be assigned to a station or allowed to choose which one to go to.
- This is an excellent opportunity to pull students who need additional support to Station 1: Small Group Instruction, where they can work with the teacher on concepts they are struggling with. Use the Teacher Planner to help target this time with students.

### Station 1: Small Group Instruction

- Identify specific students for intervention or extension.
- Choose the ST Math puzzle or problem solving question that the students struggled with.
- You may choose to use the Teacher Planner to help you plan your instruction.

### 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. They can ask themselves the questions that are on the Problem Solving Process Poster.
- With 5 minutes left, have students stop playing and complete their Puzzle Reflection and Accomplishments Log.

### Station 3: Table Games

- Allow students to choose one of the games they have learned.
- Have students play that game.
- Ask students to complete an Exit Ticket during the final 5 minutes.

### Station 4: Design Challenge

- Have students continue to build their games.
- Once they have finished building their games, they will play the games as a group to test them out. Have students complete page 14 in the Design Challenge Station Booklet.
- After they test their games, students can make any changes to their games they see are needed. The goal is to have them done so other students can play their games on Day 5 to test them out.

## Closing (10 minutes)

### Thinking and Reflecting Time

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