Illustrative Mathematics®

GRADE 1
Unit

2

Teacher Adaptation Pack

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Directions for Use

1. Read the current grade-level unit standards and dependencies.

2. Ask prior grade-level teachers if students were taught the topics when school was in physical session last year. Another option is to show the students a problem on the topic and anonymously ask students if they know how to solve the problem.

   a. If yes, start the current grade-level section without the add-in lessons.

   b. If not, teach the prior grade-level add-in lessons.

3. After the add-in lessons, give the mini-assessment.

   a. If students got the questions correct, start the current grade-level section.

   b. If students got some things correct, start the current grade-level section, but use the ongoing practice materials to support students.

Recommended Implementation

Add-In Grade K Units 4, 8	Mini Assess	Section A Grade 1 Unit 2	Section B Grade 1 Unit 2	Section C Grade 1 Unit 2	Section D Grade 1 Unit 2
Ongoing Practice and Fluency Support					
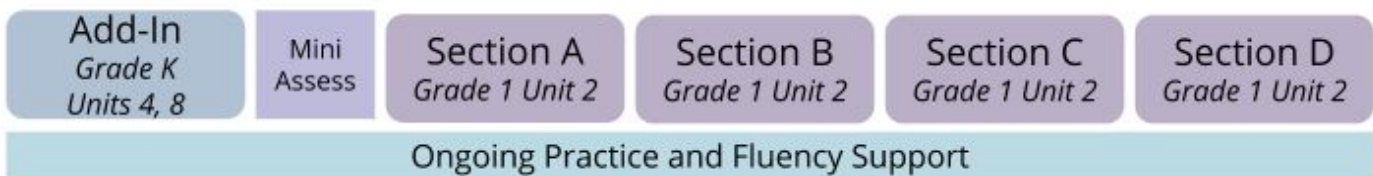
Grade 1 Unit 2: Addition and Subtraction Story Problems

Standards	1.OA.A.1, 1.OA.C.5, 1.OA.C.6, 1.OA.D.7, 1.OA.D.8, 1.MD.C.4
Prior-Grade Connections	K.OA.A.2
Rationale	In this unit, students solve many different types of story problems, such as Add to/Take From, Change Unknown; Put Together/Take Apart, Unknowns in All Positions; and Compare, Difference Unknown. The work of Sections A and B builds on the work students did with story problems in kindergarten, solving Put Together/ Take Apart and Add to/Take From with the result unknown. Developing an understanding of these types of stories is important before moving on to more complex problem types. We recommend adding several lessons from kindergarten before beginning the unit. These lessons will provide a foundation for Sections A and B.
Add-in Lessons	Before Section A: ● K.4 Lesson 9 ● K.4 Lesson 11 ● K.8 Lesson 26 ● K.8 Lesson 27 ● K.8 Lesson 29
1.2 Lessons to Combine or Skip	None
Prior-grade Practice and Fluency	● Center: Tell Story Problems Center: Stage 3 ● Center: Put Together 5-Frames Stages 1 and 2 ● Center: Roll and Add Stage 1
Extension and Exploration	● IM Task: Field Day Scarcity ● IM Task: School Supplies ● IM Task: Elena's Marbles ● IM Task: Sharing Markers
Assessment	Mini-assessment If students need Ongoing Practice ● Center: Tell Story Problems Stage 3

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K.4 Lesson 9: Organized Drawings of Story Problems

Teacher-facing Learning Goals
- Solve Add To, Result Unknown, and Take From, Result Unknown story problems within 10.
- Analyze drawings that represent story problems.

Addressing CCSS: K.OA.A.2

Lesson Purpose
The mathematical purpose of this lesson is to interpret, represent, and solve Add To, Result Unknown and Take From, Result Unknown story problems. Students discuss how organizing representations can help interpret the representation and connect it to the story problem.

Materials Needed

Gather	Copy
- two-color counters - connecting cubes - display images (Activity 1 synthesis, Activity 2 synthesis, lesson synthesis)	none

Look Fors
- Students act out the story problems.
- Students use counters or other physical objects to represent the story problems.
- Students draw pictures of the objects from the story problems.
- Students draw abstract representations of the objects, such as circles or tick marks.
- Students identify the objects represented in drawings.
- Students explain how a drawing does or doesn't represent a story problem.

Teacher Reflection Question

This is the first of several lessons with a focus on representing story problems. Which students represented stories organized with sets of objects or drawings? Did any students become more organized after the first activity synthesis?

Lesson Narrative

In the previous lesson, students interpreted, solved, and represented Put Together, Total Unknown and Take From, Result Unknown story problems. In this lesson, students solve Add To, Result Unknown and Take From, Result Unknown story problems. They interpret drawings, some correct and some incorrect, and they begin to examine how the organization of the elements in a drawing is important. Both the warm-up and the lesson synthesis focus on how organization can help interpret drawings. With only one exception, the images students analyze in the lessons are organized in lines, and this will continue to be the case going forward.

The goal of the lesson synthesis is to compare two drawings of a set of counters, one without order and the other with separate colors in separate lines.

Access for Students with Disabilities	Access for English Learners
Activity 1: Engagement	Activity 1: MLR8 Discussion Supports

Student-facing Learning Goal: Let's organize our drawings.

Optional Warm-up Narrative: How Many Do You See: Organized or Scattered	Addressing CCSS: K.CC.B.5

The purpose of this How Many Do You See is to notice how an organized set of dots can be quicker to count than an unorganized set of dots. As students make drawings to represent story problems, they will need to make choices about organization. Making choices that facilitate figuring out how many objects are in the representation will be an important skill throughout the next several lessons.

Task Statement

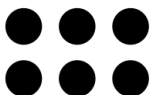How many dots do you see? How do you see them?

Image 1

Image 2

Launch/Activity

- Groups of 2
- "How many dots do you see? How do you see them?"
- Display the image.
- 1 minute: quiet think time
- Display the image.
- 1 minute: partner discussion
- Record responses.
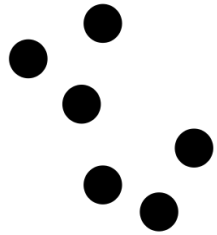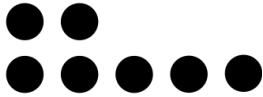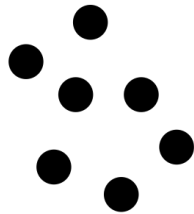- Repeat for each image.

Synthesis

Image 3

Image 4

- "Which groups were easier to figure out how many? Why?" (I have to count each dot in the scattered images. It's hard to tell if I have counted each dot only once. The other images have groups that I can see right away, like 3 and 5 and 2.)

Student Responses
1. 6. Sample response: I see 3 and 3.
2. 6. Sample response: I counted each of them.
3. 7. Sample response: I counted the top ones and then the bottom ones.
4. 7. Sample response: I counted each dot.

Activity 1 Narrative: Lunch in the Cafeteria	**Addressing CCSS:** K.OA.A.2

The purpose of this activity is to solve an Add To, Result Unknown story problem and examine different ways to represent the situation. Students examine a drawing of the situation with stick figures representing people and they also analyze a more abstract drawing that resembles counters. In each case, the goal is to identify how the drawings capture what happens in the story.

When they solve the problems, monitor for students who:
- represent the situation with physical objects like counters
- draw literal representations of the situation (like stick figures)
- draw abstract representations (circles or other geometric figures)

If possible, use student-generated drawings like the ones provided for discussion.

The purpose of the activity synthesis is to compare two different representations of the story, one literal, and one abstract.

SwD Support Tags

- Engagement

MLR Tags

- MLR8 Discussion Supports

EL Support Text

MLR8 Discussion Supports. Synthesis: For each observation that is shared, invite students to turn to a partner and restate what they heard using precise mathematical language.
Advances: Listening, Speaking

SwD Support Text

Engagement: Provide Access by Recruiting Interest. Launch/Activity: Invite students to generate a list of additional examples of solving Add To, Result Unknown story problems that connect to their personal backgrounds and interests.
Supports accessibility for: Conceptual Processing, Language

Task Statement
There were 5 students eating lunch at the table.
Then 2 more students came to the lunch table.
How many students are at the table now?
Show your thinking using objects, drawings, numbers, or words.

Student Responses
7 students. Sample representations:

- Uses 5 red counters and 2 yellow counters and counts the total
- Draws the students around a table

Launch/Activity
- Groups of 2
- Give students access to two-color counters and connecting cubes.
- "There were 5 students eating lunch at the table. Then 2 more students came to the lunch table. How many students are at the table now?"
- "Tell your partner what happened in the story."
- 30 seconds: quiet think time
- 2 minutes: partner discussion
- Share responses.
- "Solve the problem. Show your thinking using drawings, numbers, words, or

| | objects." |
| | 3 minutes: quiet work time 2 minutes: partner discussion Monitor for a student who uses counters to represent and solve the problem. Monitor for a student who made a drawing using people. |

Synthesis

- Select previously identified students to share.
- Display the representations of the students that shared, or use the samples in the student responses.
- "How are the representations the same? How are they different? " (One uses counters and one is a drawing. The drawing shows the table, while the counters do not. The drawing shows stick figures that resemble people, but the counters do not.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.
- "Why are there 5 stick figures on top and 2 stick figures on the bottom?" (Because there were 5 students sitting at the table first and then 2 more students came over to the table.)
- "How can we organize our counters to show that there were 5 students sitting at the table eating lunch and then 2 more students came to the table?" (We can put the red counters and the yellow counters together. We can put 5 in a line and 2 in a line.) "One way to write 5 students and 2 more is 5 + 2."

| **Activity 2 Narrative:** A Basket of Eggs | **Addressing CCSS:** K.OA.A.2 |

The purpose of this activity is to solve a Take From, Result Unknown story problem. Then students examine 2 drawings, one of which accurately represents the story and one of which represents addition instead of subtraction. Both drawings use circles to represent the eggs in the story, and they also both can be interpreted as starting out with 6, as in the story.

Monitor for students who:

- use counters or connecting cubes or other objects to represent the eggs
- draw the eggs or draw symbols to represent the eggs
- show all 6 eggs and indicate which 2 are taken away

The goal of the synthesis is to examine a correct and incorrect representation of the story and explain how they fit or do not fit what happens.

Task Statement

There were 6 eggs in the basket.
Jada took 2 eggs out of the basket.
How many eggs are in the basket now?

Show your thinking using objects, drawings, numbers, or words.

Student Response
4 eggs. Sample response:

$$\bigcirc \, \bigcirc \, \bigcirc \, \bigcirc \, \otimes \, \otimes$$

Launch/Activity
- Groups of 2
- Give students access to counters and connecting cubes.
- "There were 6 eggs in the basket. Jada took 2 eggs out of the basket. How many eggs are in the basket now?"
- "Tell your partner what happened in the story."
- 30 seconds: quiet think time
- 2 minutes: partner discussion
- Share responses.
- "Solve the problem. Show your thinking using drawings, numbers, words, or objects."
- 3 minutes: quiet work time
- 2 minutes: partner discussion
- Monitor for students who draw circles or other figures and cross some of them out.

Synthesis
- Select previously identified student to share.
- Display the representation of the student that shared or use the image in the student response.

|	
	● Display the image: ● "How are the drawings the same? How are they different?" (They both show 6, but one drawing shows 2 more and the other drawing shows 2 crossed out.) ● "Do the drawings show what happened with Jada's eggs?" (One drawing does not, since it shows 6 and then 2 more. The other drawing does show 6 and then 2 crossed out for the eggs Jada takes out of the basket.) ● "One way to write 6 eggs with 2 eggs taken away is 6 – 2."

Activity 3 Narrative: Comparing Representations	**Addressing CCSS:** K.OA.A.2

The purpose of this activity is for students to compare the representations and connect them to the stories.

Task Statement	**Launch/Activity**
	● Groups of 2 ● "We just solved two different problems and had drawings that looked like these." ● Display or draw the images and remind students of the stories for each. ● "Why did we cross out items on one of the representations, but not the other?" (Because there were eggs taken out of the basket, and in the other one, the things were being combined.) ● 2 minutes: partner discussion **Synthesis** ● Share responses.

Lesson Synthesis

Display these images, each one representing the story about students at lunch from today's lesson:
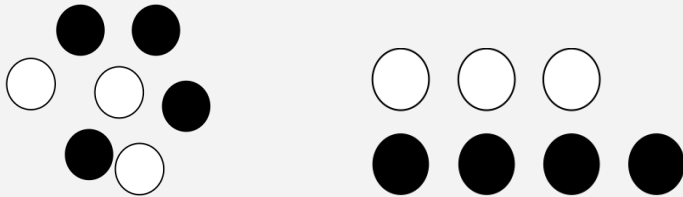
"How are the images the same?" (They both show circles. There are 4 black circles in each and 3 white circles in each.)

"How are the images different?" (The circles in the first image are scattered. The circles in the second image are in two rows.)

Highlight that organized drawings like the second one can be easier to interpret, especially when there are many objects in the drawing.

Suggested Center Activities: Center B: Stage 2, Center C: Stage 2, Center D: Stages 1, 2, and 3

K.4 Lesson 11: Comparing Addition and Subtraction Story Problems

Teacher-facing Learning Goals
- Solve Add To, Result Unknown and Take From, Result Unknown story problems within 10.
- Compare addition and subtraction story problems.

Addressing CCSS: K.OA.A.1, K.OA.A.2

Lesson Purpose
The mathematical purpose of this lesson is to solve Add To, Result Unknown and Take From, Result Unknown story problems and compare representations that show the actions. Students are formally introduced to addition and subtraction expressions.

Materials Needed

Gather	Copy
- two-color counters - connecting cubes (optional) chart paper - display images (Activity 2, lesson synthesis)	none

Look Fors
- Students make drawings showing the action in a story problem.
- Students relate expressions to story problems.
- Students explain the difference between addition and subtraction story problems and their representations.

Teacher Reflection Question

The lessons in this unit provide many methods to represent story problems. What are the differences between the representations and what are the benefits to using the more abstract representations?

Lesson Narrative

In previous lessons, students solved Add To, Result Unknown; Take From, Result Unknown; and Put Together, Total Unknown story problems. The purpose of this lesson is to solve Add To, Result Unknown and Take From, Result Unknown story problems with the same context, which gives students an opportunity to focus on the action in each story and how it determines whether they need to add or

subtract to solve the problem. Because this lesson focuses on the different actions in Add To, Result Unknown and Take From, Result Unknown story problems, students are formally introduced to expressions. While students have seen expressions in previous lessons, this is the first time that the meaning of the addition and subtraction signs are explained.

Students can represent their work for the problems in Activities 1 and 2 on chart paper and students can do a gallery walk to compare representations.

The goal of the lesson synthesis is to compare and contrast the operations of addition and subtraction by analyzing drawings showing two closely related expressions: 5 + 4 and 9 – 4. Students see that each drawing shows 9 total objects. In the addition situation, the 5 and 4 are put together, whereas in the subtraction drawing, 4 are removed or crossed out.

Access for Students with Disabilities	**Access for English Learners**
Activity 1: Engagement	Activity 1: MLR8 Discussion Supports

Student-facing Learning Goal: Let's compare addition and subtraction.	
Optional Warm-up Narrative: How Many Do You See: Putting Together	**Addressing CCSS:** K.CC.B.5

The goal of this warm-up is to present three closely related dot images. Two of them are in arrangements which some students will have subitized, so they may recognize them without counting. The third image puts the first two images together. In this lesson, students study the different ways three quantities can be related to one another—through addition or subtraction.

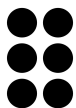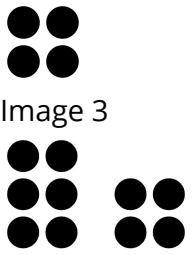| **Task Statement**	**Launch/Activity**
How many dots do you see and how do you see them? Image 1 ● ● ● ● ● ● Image 2	● Groups of 2 ● "How many dots do you see and how do you see them?" ● Display the image. ● 1 minute: quiet think time ● Display the image. ● 1 minute: partner discussion ● Record responses.

Image 3

Student Responses
1. 6. Sample response: It looks like a number cube.
2. 4. Sample response: It looks like a number cube.
3. 10. Sample response: It's the last 2 together.

Synthesis
Focus question:
- "How are the three dot images related to one another?" (The first two images are put together to get the third image.)
- If no student mentions it, consider highlighting that the first image can be made from the third by removing some of the dots.

Activity 1 Narrative: Penguins Swimming Ashore	**Addressing CCSS:** K.OA.A.1, K.OA.A.2

The purpose of this activity is to solve an Add To, Result Unknown story problem and formally introduce the addition sign. Up to this point, the teacher has represented the solution to each story problem with an expression. Monitor for students who make a drawing that shows the action in the story—that is, they show the group of 5 penguins that were initially on the shore and the 4 penguins who came to join them. Invite them to share their representation at the beginning of the synthesis.

The purpose of the activity synthesis is to introduce the meaning of the plus sign in the expression 5 + 4 that represents the story.

SwD Support Tags

- Engagement

MLR Tags

- MLR8 Discussion Supports

EL Support Text

MLR8 Discussion Supports. Synthesis: Some students may benefit from the opportunity to rehearse what they will say with a partner before they share with the whole class.
Advances: Speaking

SwD Support Text

Engagement: Provide Access by Recruiting Interest. Launch/Activity: Invite students to generate a list of additional examples of Take From, Result Unknown story problems that connect to their personal backgrounds and interests.
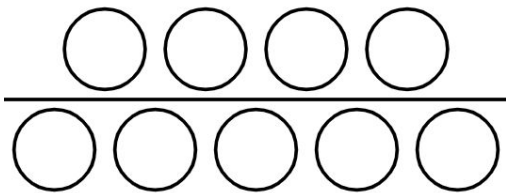*Supports accessibility for: Conceptual Processing, Language*

Task Statement

There were 5 penguins on the shore.
Then 4 more penguins swam in from the ocean to sit on the shore.
How many penguins are there now?

Show your thinking using objects, drawings, numbers, or words.

Student Responses
9 penguins. Sample representation:

Launch/Activity
- Groups of 2
- Give students access to counters and connecting cubes.
- "Today we are going to hear a story about penguins. Have you ever seen penguins? Where?"
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.
- Display the image:

- "These are penguins. Our story problems today are going to be about penguins."
- "There were 5 penguins on the shore. Then 4 more penguins swam in from the ocean to sit on the shore. How many penguins are there now?"
- "Tell your partner what happened in the story."
- 30 seconds: quiet think time
- 2 minutes: partner discussion
- Share responses.
- "Solve the problem. Show your thinking using drawings, numbers, words, or

objects."
- 3 minutes: quiet work time
- 2 minutes: partner discussion
- Monitor for students whose drawings show two separate groups of penguins—the ones on shore and the ones who came to join them.

Synthesis
- Select the previously identified student to share.
- "_____ organized their drawing in two lines."
- Share a student representation or use the image in the student response.
- "How does the drawing show what happens in the story?" (There are 5 circles on the bottom for the 5 penguins on shore and 4 circles on top for the ones who came to join them.)
- "The expression 5 + 4 means that we start with 5 and then add 4 more. The plus sign '+' means that the 5 and 4 are combined or put together."

Activity 2 Narrative: Penguins Out for a Swim	**Addressing CCSS:** K.OA.A.1, K.OA.A.2

The purpose of this activity is to solve a Take From, Result Unknown story problem with the same context as the Add To, Result Unknown story problem in the previous activity. The numbers in the two problems are the same and what has changed is the action—that is, instead of 4 penguins joining a group of 5, 4 penguins leave the larger group of 9.

The purpose of the activity synthesis is to introduce the meaning of the minus sign in the expression 9 – 4 that represents the story.

Task Statement

There were 9 penguins on the shore.
Then 4 of the penguins waddled away to the ocean.
How many penguins are on the shore now?

Show your thinking using objects, drawings, numbers, or words.

Launch/Activity
- Groups of 2
- Give students access to counters and connecting cubes.
- "There were 9 penguins on the shore. Then 4 of the penguins waddled away to the ocean. How many penguins are on the shore now?"
- "Tell your partner what happened in the

Student Responses
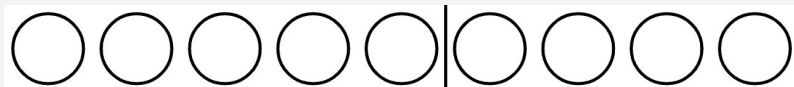
Sample representation:
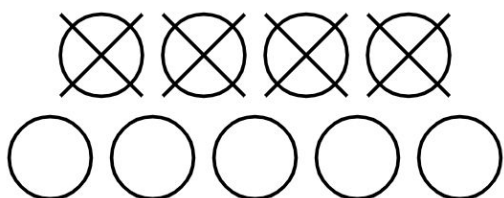
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- story."
- 30 seconds: quiet think time
- 2 minutes: partner discussion
- Share responses.
- "Solve the problem. Show your thinking using drawings, numbers, words, or objects."
- 3 minutes: quiet think time
- 2 minutes: partner discussion
- Monitor for students who make an organized drawing of the 9 penguins and show which 4 go to the ocean.

Synthesis

- Select a previously identified student to share.
- "_____ organized their drawing in two lines and crossed out some of the circles."
- Share a student representation or use the image in the student response.
- "How does the drawing show what happens in the story?" (There are 5 circles and 4 more, so that makes 9. 4 circles are crossed out for the penguins who waddled away.)
- "The expression 9 – 4 means that we start with 9 and then take 4 from the 9. The minus sign means that 4 are taken from 9."

Lesson Synthesis

Read the first story problem and show this representation (or a student representation).

○ ○ ○ ○ ○ | ○ ○ ○ ○

Read the second problem and show this representation (or a similar student representation).
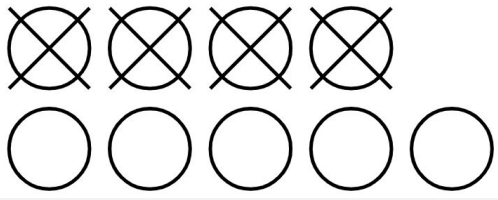
"How are the images the same?" (Both have 9 circles. There is a group of 5 in both. There is a group of 4 in both.)

"How are they different?" (In the second drawing, the group of 4 circles is crossed out. In the first drawing, the circles are in a line. In the second drawing, they are in rows like a 10-frame.)

"How are the stories the same?" (Both stories have 9 penguins total.)

"How are the stories different?" (In the first story, all 9 penguins are on shore after 4 swim to the shore. In the second story, 4 of the penguins leave.)

"The first drawing shows 5 + 4 (five and four more) and the second drawing shows 9 – 4 (nine with four taken away)."

Suggested Center Activities: Center B: Stage 2, Center C: Stage 2, Center D: Stages 1, 2, and 3

K.8 Lesson 26: Acting Out and solving Story Problems

Teacher-facing Learning Goals
- Interpret stories by acting them out.
- Represent story problems with drawings.

Addressing CCSS: K.OA.A.1, K.OA.A.2

Lesson Purpose
The purpose of this lesson is for students to act out, represent, and solve story problems.

Materials Needed

Gather	Copy
• connecting cubes • display image (warm-up, lesson synthesis)	• none

Cool-down: Playing in the Sand

5 children played in the sand.
1 more child joined them.
How many children are playing now?
Show your thinking using drawings, numbers, or words.

Student Responses
6 children
5 + 1

Teacher Reflection Question
What strategies did students use in Activity 2? Did they act out problems like in the first activity or use objects, drawing, or equations to solve the problems?

Lesson Narrative

The first three lessons in this section are optional. They review the different types of story problems—Add To/Take From, Result Unknown; Put Together, Result Unknown; and Both Addends Unknown. Students progress through different representations of the stories including

- acting out the stories
- using objects
- making drawings
- representing stories with expressions

The numbers for the problems are mostly from 6 to 9.

The purpose of this lesson is to make sense of and solve story problems. First, students act out the story in a context that is about people, so each group of students makes a natural representation of the story. Then students solve story problems without a direction to act them out. They may solve the problems using any method and make drawings to represent the stories.

The goals of the Activity 2 and lesson syntheses are to highlight how the drawings represent the stories with both addition and subtraction.

Access for Students with Disabilities
Activity 2: Action and Expression

Access for English Learners
Activity 1: MLR8 Discussion Supports

IM K–5 MATH

Student-facing Learning Goal: Let's act out and solve story problems.	
Warm-up Narrative: How Many Do You See: Different Representations	**Addressing CCSS:** K.CC.B
The purpose of this How Many Do You See is to allow students to use subitizing or grouping strategies to describe the images they see. It also revisits 5-frames, 10-frames, and fingers, tools which will be useful to students throughout these problem-solving lessons.	

Task Statement

How many do you see? How do you see them?
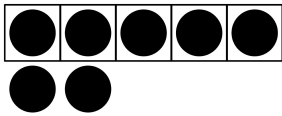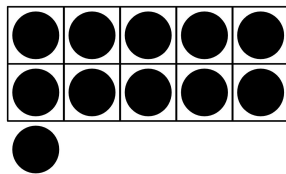
Image 1:

Image 2:

Image 3:

Student Responses
Sample responses:
- 7. There are 5 and 2 more.
- 11. There are 10 and 1 more.
- 9. There is one less than 10 which is 9.

Launch/Activity
- Groups of 2
- "How many do you see? How do you see them?"
- Display the image.
- 1 minute: quiet think time
- Display the image.
- 1 minute: partner discussion
- Record responses.

Synthesis
- "Where do you see 5 in each image?" (The first image has a full 5-frame. The second image has 2 full 5-frames. The third image has one hand with 5 fingers.

Activity 1 Narrative: Stepping Out	Addressing CCSS: K.OA.A.1

The purpose of this activity is to act out a subtraction story. Students will solve story problems in the next several lessons and acting out the situation can help students understand a problem, especially in a situation like the one presented here which is about small groups of people.

The goal of the activity synthesis is to act out an addition situation to complement the subtraction situation. Unlike the subtraction situation, with addition it is more difficult to see how many students there are so a written representation might be more helpful to figure out how many people are on the elevator.

MLR Tags

- MLR8 Discussion Supports

EL Support Text

MLR8 Discussion Supports. Synthesis: At the appropriate time, give students 2–3 minutes to make sure that everyone in their group can explain the story problem. Invite groups to rehearse what they will say when they share with the whole class.
Advances: Speaking, Conversing, Representing

Task Statement	Launch/Activity
There were 5 people on the elevator. Then 3 people got off the elevator. How many people are on the elevator now? **Student Responses** 2 people	- Groups of 5 "I'm going to read you a story, then you will get to act it out in groups. Think about how you can act out the story." - Display and read story. "Tell your partner what happened in the story." 30 seconds: quiet think time 30 seconds: partner discussion - Monitor for students who accurately retell the story. Choose at least one student to share with the class. "Now you will get to act out the story in your groups." - Assign groups to different parts of the room. Read the story again as students act out the story.

	● 5 minutes: small-group work time ● Monitor for students who sit down or walk away to represent getting off the elevator. **Synthesis** ● Invite selected groups to act out getting off the elevator. ● "How did _____ act out the people getting off the elevator?" (They walked away from the group.) ● "How many people are still on the elevator? How do you know?" (2. There are still 2 students left after the others walked away.) ● "There are now 5 people on the elevator. What if 3 more people got on the elevator? How would you act that out?" (We could get 3 more people to come stand with us.) ● "How many people would be on the elevator now? How do you know?" (8. I counted 6, 7, 8 for the 3 more people).
Activity 2 Narrative: Solving Story Problems	**Addressing CCSS:** K.OA.A.1, K.OA.A.2

The purpose of this activity is to represent story problems with drawings. Students represent and solve one Take From, Difference Unknown and one Put Together, Total Unknown story.

The purpose of the activity synthesis is to explain both how the drawings represent the stories and how they can be used to solve the story problems.

SwD Support Tags

● Action and Expression

SwD Support Text

Action and Expression: Develop Expression and Communication. Synthesis: Identify connections between strategies that result in the same outcomes but use differing approaches.

Supports accessibility for: Conceptual Processing

Task Statement

1. There were 6 airplanes on the runway. Then 2 airplanes flew away. How many airplanes are on the runway now?
   Show your thinking using drawings, numbers, or words.

2. There are 4 giraffes and 3 elephants drinking at the pool. How many animals are drinking?
   Show your thinking using drawings, numbers, or words.

Student Responses
1. 4 airplanes,
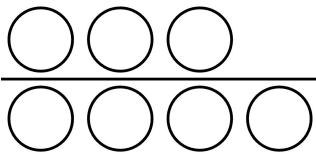
2. 7 animals,

Launch/Activity
- Groups of 2
- Give students access to connecting cubes.
- "We are going to solve 2 story problems."
- Read the first story problem.
- Display and read the story.
- "Tell your partner what happened in the story."
- 30 seconds: quiet think time
- 2 minutes: partner discussion
- Monitor for students who accurately retell the story. Choose at least one student to share with the class.
- "Solve the problem. Make a drawing to show your reasoning."
- 2 minutes: quiet work time
- 1 minute: partner discussion
- Repeat for the second story problem.
- Monitor for students who draw circles or other simple shapes to represent the airplanes and animals.

Synthesis
- Invite a selected student to share a representation of the solution to the first problem or use the image in student solution.
- "How many planes are on the runway now? How do you know?" (4. The drawing shows the 6 planes then 2 flew away, the crossed out circles, and 4 are left.)
- Display expression: 6 – 2
- "How does the drawing show 6 – 2?" (There are 6 circles and then 2 are crossed out.)

Lesson Synthesis

Read the second story problem from Activity 2.

Display image:
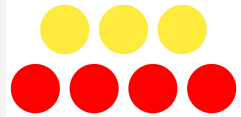
Read the second story from activity 2: "There are 4 giraffes and 3 elephants drinking at the pool. How many animals are drinking?"

"How does the diagram represent the story?" (The 4 red circles are the giraffes and the 3 yellow circles are the elephants.)

"How does the diagram help answer the question?" (I can count the circles: 1, 2, 3, 4, 5, 6, 7 so there are 7 animals drinking.)

K.8 Lesson 27: Creating Math Stories

Teacher-facing Learning Goals
- Create math stories that match an action or expression.
- Match expressions and drawings.

Addressing CCSS: K.OA.A.1, K.OA.A.2

Lesson Purpose
The purpose of this lesson is for students to create story problems matching an action or an expression.

Materials Needed

Gather	Copy
● display image (activity 1)	● none

Cool-down: Drawings and Expressions

Circle the drawing that represents 4 + 2.

Student Responses

Teacher Reflection Question

In this lesson, students approach story problems from a variety of points of view, including acting them out, making drawings, and interpreting drawings and equations. With which approaches are the students most comfortable and confident? How can you use student preferences to involve all students in learning?

Lesson Narrative

The purpose of this optional lesson is to tell math stories given different representations. In Activity 1, two groups of students act out a story and the actions serve as a basis for the story. In this case, the number of students acting is not given, but students can determine this by counting. In Activity 2, students choose an addition or subtraction expression and write a story to match the expression. While more abstract than the action of the first activity, the numbers are provided so students do not need to count.

The goal of the lesson synthesis is to compare and contrast different stories students wrote in the second activity for a particular expression.

Access for Students with Disabilities	**Access for English Learners**
Activity 2: Representation	Activity 2: MLR7 Connect and Compare

Student-facing Learning Goal: Telling Math Stories

Warm-up Narrative: True or False: Addition Equations	**Addressing CCSS:** K.OA.A.1

The purpose of this True or False is to elicit strategies and understandings students have for addition within 10. These understandings help students deepen their understanding of the properties of addition and will be helpful later when students will need to be able to add in order to solve story problems.

Task Statement	**Launch/Activity**
Is each statement true or false? Be prepared to explain your reasoning. 3 + 2 = 5 3 + 3 = 6 4 + 2 = 6 5 + 2 = 8 **Student Responses** ● True. Sample response: I held up 3 fingers and 2 fingers and that was 5. ● True. Sample response: It's 3 and 2 and 1 more so that's 1 more than 5 or 6. ● True. Sample response: One hand is 4 and 1 or 5 so 4 + 2 is 1 more or 6. ● False. Sample response: 5 on one hand and 2 on the other is 7, not 8.	● Display one problem. ● "Give me a signal when you know whether the equation is true and can explain how you know." ● 1 minute: quiet think time ● Share and record answers and strategy. ● Repeat with each problem. **Synthesis** ● Display expressions: 3 + 2 and 3 + 3. ● "How are the expressions related?" (They both have a 3 and the second one has a 3 rather than a 2) ● "How are the values of the expressions related?" (3 + 3 is 1 more than 3 + 2)

Activity 1 Narrative: Exercise Time	**Addressing CCSS:** K.OA.A.1, K.OA.A.2

The purpose of this activity is to tell a story about student actions and ask a math question. One group of students pretends to jump rope and the other group pretends to play basketball. Students will be able to see that there are 2 students pretending to play basketball but will need to count the students who are jumping rope. The actions that students perform can be changed to make them more engaging for students.

The purpose of the activity synthesis is to share stories and discuss how to make a drawing to represent the student actions.

| **Task Statement**
N/A

Student Responses
6 students are jumping rope. 2 students are playing basketball. How many students are there altogether? | **Launch/Activity**
● Groups of 2
● "You are going to work with your partner to tell a story."
● Invite a group of 8 students to stand up.
● Tell 6 of the students to pretend to jump rope. Tell the other 2 students to |

	pretend to play basketball.
	● "Work with your partner to tell a story about the students. Make sure to ask a math question."
	● 5 minutes: partner work time
	● Monitor for students who ask how many students there are altogether, jumping rope and playing basketball.
	Synthesis
	● Invite selected students to share their stories.
	● "How did you know there were 2 students playing basketball?" (I just saw them.)
	● "How did you know there were 6 students jumping rope?" (I counted them.)
	● "How can I draw a picture representing the story?" (Draw 6 circles for the students jumping rope and 2 circles for the students playing basketball)
	● Display the image:
	● "How can I improve this drawing?" (Show which of the kids are jumping rope and which are playing basketball.)
	● 30 seconds: quiet think time
	● Share responses.
	● Modify drawing based on students' responses.

| **Activity 2 Narrative:** Which Expression? | **Addressing CCSS:** K.OA.1, K.OA.2 |

The purpose of this activity is to match expressions with drawings. Then, students tell a story to match one of the expressions. For the matching, students will need to look carefully at the operations and images because many of the numbers in the expressions are the same. As students make stories, monitor for those who write different kinds or problems, in particular Put Together, Total Unknown and Add To, Total Unknown.

The goal of the activity synthesis is to invite students to share their stories and have the other students identify the expression that matches the story.

SwD Support Tags

- Representation

MLR Tags

- MLR7 Compare and Connect

EL Support Text

MLR7 Compare and Connect. Synthesis: Lead a discussion comparing, contrasting, and connecting the different representations. Ask, "How do these different stories show the same information?", "How are the story problems the same?", "How are they different?" *Advances: Representing, Conversing*

SwD Support Text

Representation: Internalize Comprehension. Synthesis: Invite students to identify which details were most important to tell the story, solve the problem. Display the sentence frame, "The next time I tell a story to match an addition or subtraction expression, I will pay attention to . . . "
*Supports accessibility for: Memory, Conceptual Processing*

| Task Statement	Launch/Activity
	- Groups of 2 "Match each drawing with an expression." 3 minutes: individual work time 2 minutes: partner discussion time "Choose one of the expressions and tell a story for the expression. Share your story with your partner and make sure you agree that your stories represent one of the expressions." 4 minutes: partner work time - Monitor for students who tell subtraction and addition stories to share in the activity synthesis. Also monitor for students who tell Put

5 + 3	6 + 2
2 + 5	5 - 2

Write an expression that represents each picture.

1. _____

2. ○○⊗⊗⊗ _____

3. ○○|○○○○ _____

4. _____
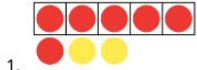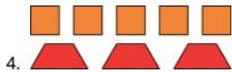
5. Pick a drawing an expression and tell your partner a story for the expression.

Student Responses

1. 6 + 2
2. 5 – 3
3. 2 + 5
4. 5 + 3
5. Answers vary, Sample response: There are 6 apples and 2 oranges in the basket. How many pieces of fruit are in the basket?

Together, Total Unknown and Add To, Total Unknown stories for one of the addition expressions to share in the lesson synthesis.

Synthesis

- Invite selected students to share stories.
- "Which expression matches _____'s story? How do you know?" (Answers vary. 6 + 2 because there were 6 dogs and 2 cats so 6 + 2 is the number of animals.)
- Repeat for several stories.

Lesson Synthesis

Share two student stories for one of the addition expressions in Activity 2 or use these two stories:
"There were 6 students eating lunch. Then 2 more students came to join them. How many students are at lunch now?"
"There are 6 cats and 2 dogs in the park. How many animals are in the park altogether?"
"How are the two stories the same? How are they different?" (There are 6 and 2 in both stories. There are 8 total in both stories. One story is about students and one story is about animals. Something happens in the first story. Nothing happens in the second story.)

K.8 Lesson 29: Counting to Add and Subtract

Teacher-facing Learning Goals
- Solve Add To and Take From, Result Unknown story problems.
- Use stories to relate the sequence of counting numbers to adding and subtracting 1.

Building on CCSS: K.CC.B.4.c
Addressing CCSS: K.OA.A.2

Lesson Purpose
The purpose of this lesson is to solve story problems involving addition or subtraction of 1. Students relate addition or subtraction of 1 to the sequence of counting numbers.

Materials Needed

Gather	Copy
● 10- frames ● counters or connecting cubes	● none

Cool-down: Getting on the Bus
9 students were on the bus.
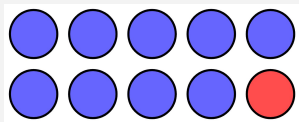Then 1 more student got on the bus.
How many students are on the bus now?
Show your thinking using objects, drawings, numbers, or words.

Student Responses
10

Teacher Reflection Question
The count sequence is an important scaffold for solving problems involving addition and subtraction of 1. Which students are not solving these problems by counting forward or backward? How can you support them?

Lesson Narrative

In previous lessons students have solved Add To/Take From, Result Unknown; Put Together/Take Apart, Result Unknown; and Both Addends Unknown story problems. They have also examined how adding 1 to a number gives the next counting number.

The purpose of this lesson is to combine these two ideas, focusing on story problems involving addition or subtraction of 1. In Activity 1, students solve one Add To, Result Unknown and one Take From, Result Unknown story problem. In the second activity they examine questionless and numberless versions of problems of the same kind and see how they relate to the sequence of counting numbers.

The goal of the lesson synthesis is to relate counting, using part of a choral count, to adding 1 and subtracting 1. Counting and operating on numbers, addition and subtraction, are two of the most important topics students have worked on this year and this gives an opportunity to explicitly link these two ideas.

Access for Students with Disabilities	Access for English Learners
Activity 1: Action and Expression	Activity 2: MLR8 Discussion Supports

Student-facing Learning Goal: Let's solve story problems.	
Warm-up Narrative: Choral Counting to 40	**Addressing CCSS:** K.CC.A.1

The purpose of this warm-up is to practice counting forward and backward with a different starting number. The count sequence, both forward and backward, is especially important in this lesson which focuses on story problems where 1 is added or taken away, giving either the next number or the previous number in the count sequence.

Task Statement	Launch/Activity
N/A	- Count by 1, starting at 10. - Record as students count. - Stop counting and recording at 40. - Count by 1, starting at 20. - Record as students count. - Stop counting and recording at 40. - Count by 1 backwards, starting at 20. - Record as students count. - Stop counting and recording at 0. - Count to 40 starting at 10. "What patterns do you see?"
Student Responses - Students say count sequence from 10 to 40. - Students say count sequence from 20 to 40. - Students say count sequence backward from 20 to 1.	

	● 1–2 minutes: quiet think time ● Record responses. **Synthesis** ● "In today's lesson you will solve story problems closely related to counting forward and backward."

Activity 1 Narrative: Riding the Bus	**Addressing CCSS:** K.OA.A.2,

The goal of this activity is to solve Add To/ Take From, Result Unknown story problems. The problems have the same context and deal with situations where 1 is added or taken away.

The goal of the activity synthesis is to highlight how the two problems are the same and different. The key similarities are the context and the change by 1. The key difference is the operation that represents the story (addition versus subtraction).

SwD Support Tags

● Action and Expression

SwD Support Text

Action and Expression: Develop Expression and Communication. Synthesis: Identify connections between strategies that result in the same outcomes but use differing approaches.
Supports accessibility for: Memory, Conceptual Processing

Task Statement	**Launch/Activity**
Show your thinking using objects, drawings, numbers, or words. 1. There were 7 people on the bus. Then one more person got on the bus. How many people are on the bus now?. 2. There were 10 people on the bus. Then one person got off the bus. How many people are on the bus now?	● Groups of 2 ● Give students access to connecting cubes, 2-color counters, and 10-frames. ● "Today you are going to solve 2 story problems about people on a bus." ● Read question 1. ● 2 minutes: independent work time ● 1 minute: partner discussion ● Read question 2. ● 2 minutes: independent work time ● 1 minute: partner discussion ● Monitor for students who represent the

Student Responses	number of students with expressions or who count on or count back .
1. 8 people, 7 + 1 2. 9 people, 10 – 1	**Synthesis** ● Invite students who used the count sequence to share how this helped them solve the problems. ● "_____ solved the first problem by counting up from 7." ● "What is the sum of 7 + 1? How do you know?" (8, because 8 comes after 7) ● "_____ solved the second problem by counting backwards from 10." ● "What is the difference of 10 – 1? How do you know?" (9, because 9 comes right before 10)
Activity 2 Narrative: Singing Students	**Building on CCSS:** K.CC.B.4.c, K.CC.A.1 **Addressing CCSS:** K.OA.A.2

The purpose of this activity is to examine two questionless story problems. The stories are about adding and subtracting 1, but they do not give a starting value and therefore highlight that adding 1 to *any* number gives the next number in the counting sequence while subtracting 1 from any number gives the previous number in the counting sequence. While kindergarten standards only require students to solve story problems within 10, students can solve these problems using counting concepts rather than addition and subtraction. Students should be able to answer the questions for any number less than 100, but if they struggle, encourage them to choose a smaller number.

The purpose of the activity synthesis is to solve student problems, highlighting that adding 1 gives the next number in the counting sequence and taking away 1 gives the previous number in the counting sequence.

MLR Tags

● MLR8 Discussion Supports

EL Support Text

MLR8 Discussion Supports. Synthesis: Some students may benefit from the opportunity to rehearse what they will say with a partner before they share with the whole class.
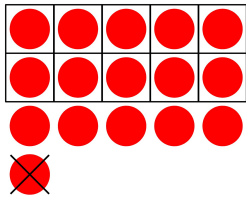*Advances: Speaking*

Task Statement

1. _____ students were singing.

   Then 1 more student came to sing with them.

   How many students are singing now?

   Show your thinking using objects, drawings, numbers, or words.

2. _____ students were singing.

   Then 1 student stopped singing and left.

   How many students are singing now?

   Show your thinking using objects, drawings, numbers, or words.

Student Responses

1. There were 16 students singing. Now there are 17 students singing.
   16 + 1
2. There were 16 students singing. Now there are 15 students singing.

Launch/Activity

- Give students access to connecting cubes or counters, and 10-frames.
- Display and read:
- Some students were singing. Then 1 more student came to sing with them. How many students are singing now?
- "What do you notice? What do you wonder?" (Students were singing. Another student came to sing. How many students were singing? How many students are singing now?)
- 1 minute: quiet think time
- 1 minute: partner discussion
- Share and record responses.
- Display and read:
- Some students were singing. Then 1 student stopped singing and left. How many students are singing now?
- "What do you notice? What do you wonder?" (Students were singing. A student left. How many students were singing? How many students are singing now?)
- 30 seconds minute: quiet think time
- 30 seconds: partner discussion
- Share and record responses.
- "Now, you are going to choose numbers for each problem and then solve them."
- 5 minutes: independent work time
- Monitor for students who choose different numbers, including teen numbers, and invite them to share their stories in the synthesis.

	Synthesis
	- Invite a student to share a story for the first problem. (There were 8 students singing. Then 1 more student came to sing with them. How many students are singing now?) "What is the answer to the question? How do you know?" (9 because 8 and 1 are 9.) "What if there were 9 students singing and 1 more came to join them? How many would there be? How do you know?" (10 since 9 and 1 make 10.) - Invite a student to share a story for the second problem. (There were 12 students singing. Then 1 student stopped singing and left. How many students are singing now?)" "What is the answer to the question? How do you know?" (11 since 11 is 1 less than 12.) "What if there were 11 students singing and one left. How many students would be singing now?" (10)

Lesson Synthesis

"Today we told stories about one more person joining a group and one more person leaving a group."
"When you add 1 to a number, which number do you get?" (The next one, the number that's one greater)
"When you take away 1 from a number, which number do you get?" (The previous one, the number that's one less)

Suggested Center Activities:
Unit 4: Center C: Stages 1–4, Center D: Stages 1–3,
Unit 6: Center B: Stages 6-9

Mini-assessment

1. There are 3 yellow stickers on Jada's book.
   There are also 2 blue stickers on Jada's book.
   How many stickers are on Jada's book in all?
   Solve the problem. Show your thinking using drawing, numbers or words,

2. There are 6 kids playing in the park.
   2 of the kids leave the park to go home.
   How many kids are playing in the park now?
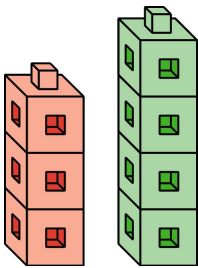   Solve the problem. Show your thinking using drawing, numbers or words.

Mini-Assessment (continued)

3. Circle the expression that represents the picture.
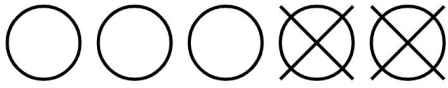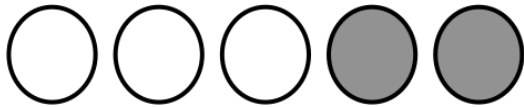
$5 + 3$ $5 - 2$

$3 + 4$ $7 + 3$

Student Responses:

1. 5 stickers
   Sample response:

2. 4 kids.
   Sample response:

3. Circles $5 - 2$ and $3 + 4$

Prior-grade Practice and Fluency Resources

Center: Tell Story Problems: Understanding Addition and Subtraction

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Addressing CCSS: K.OA.A.1

Center Narrative
The purpose of this center is to tell and demonstrate story problems. In Stage 3, students ask a question about the story and work together to solve it.

Stage Descriptions
- **Stage 3:** Tell and Solve Story Problems

Stage 3: Tell and Solve Story Problems	**Addressing CCSS:** K.OA.A.1

Teacher-facing Learning Goals
- Tell Add To, Result Unknown; Take From, Result Unknown; or Put Together, Total Unknown story problems.
- Solve Add To, Result Unknown; Take From, Result Unknown; or Put Together, Total Unknown story problems.

Look Fors
- Students tell a story problem that includes mathematical details.
- Students tell a story that matches the context on the background mat. For example, a story about fish when using the mat with a lake.
- Students retell the story in their own words, but preserve the essential information from the story.
- Students use the actual objects in the story to demonstrate the actions in the story.
- Students refer to the story when explaining what they did.
- Students push counters off their mat to represent subtraction.
- Students put more counters on their mat to represent addition.
- Students use language such as "more" or "come" to describe addition.
- Students use language such as "went away" to describe subtraction.
- Students ask "how many" questions about the story.
- Students use objects or a drawing to solve the story problem.

Student-facing Learning Goal: Let's tell and solve story problems.

Materials Needed	
Gather ● a bag of 10 two-color counters for each student ● paper (Stage 2 only)	**Copy** ● Create a set of K.4 Center D BLM Background Mats for each group of 2 students.
Student-facing Directions and Task	**Teacher Directions**
Task statement N/A	**Center Directions** ● Groups of 2 ● Give each group of students a bag of 10 two-color counters and a set of background mats. ● Student A chooses a background mat and uses their counters to tell and demonstrate a story problem. ● Student B retells the story and demonstrates the action using their counters. ● Student A asks Student B a "how many" question about the story problem. ● Student B solves the story problem. ● Students take turns until they have used all the background mats. **Questions to ask during center** ● What do each of your counters (or circles) represent? ● How did you show that 3 of the fish swam away? ● How did you show that 4 more rabbits hopped up the hill? ● Can you tell me the story in your own words? ● What question are you trying to figure out?

Center: Put Together 5 Frames: Understanding Addition and Subtraction

Addressing CCSS: K.CC.B.5, K.OA.A.1, K.OA.A.2
Center Narrative The purpose of this center is to solve Put Together, Result Unknown addition problems using dots in 5-frames. In Stage 1, students record the total number of dots on two 5-frames. In Stage 2, students record an expression and the total.
Stage Descriptions ● **Stage 1:** Put Together Dots on 5-frames ● **Stage 2:** Put Together Dots on 5-frames, Record with an Expression

Stage 1: Put Together Dots on 5-Frames	**Addressing CCSS:** K.OA.A.2, K.CC.B.5
Teacher-facing Learning Goals ● Count to find the total number of objects given 2 groups of objects, up to 10.	
Look Fors ● Students count one group of objects, then the other group of objects, then put the objects together and count all the objects, starting at 1. ● Students put the two groups of objects together to make one group, then count all the objects. ● Students count one group of objects and continue counting the next group of objects without pausing. ● Students say the last number said to answer a "how many" question. ● Students use language such as "together" or "all of them" to refer to the whole group of objects.	
Student-facing Learning Goal: Let's figure out how many dots there are on two 5-frames.	
Materials Needed	

Gather ● none	**Copy** ● Copy the recording sheet for each student. ● Create a set of K.4 Center A BLM 5-Frame Cards for each student.

Student-facing Directions and Task	Teacher Directions
Task statement N/A	**Center Directions** ● Groups of 2 ● Give each student a recording sheet and a set of 5-frame cards. ● Each student flips over a 5-frame card. ● Student A determines how many dots there are on both 5-frame cards. Student A tells Student B how many dots there are altogether. Student B checks their partner's work. ● In Stage 2 only, both students write an expression to represent the total number of dots in each 5-frame. ● Both students record the total on their recording sheet. ● Students take turns until they have used all the cards. **Questions to ask during center** ● How many dots are on this 5-frame? How many dots are on this 5-frame? How many dots are there altogether? ● How many more dots do you need to have 5 dots? ● If I added one more dot to this 5-frame, how many dots would there be?

Center: Roll and Add: Understanding Addition and Subtraction

Addressing CCSS: K.OA.A.1, K.CC.C.7
Center Narrative The purpose of this center is for students to solve Put Together, Result Unknown addition problems. In Stage 1, students add together the dots in two different groups of dots.
Stage Descriptions

- **Stage 1:** Roll and Add Dots

Stage 1: Roll and Add Dots	**Addressing CCSS:** K.OA.A.1, K.CC.C.7

Look Fors
- Students count one group of objects, then the other group of objects, then put the objects together and count all the objects, starting at 1.
- Students put the two groups of objects together to make one group, then count all the objects.
- Students count one group of objects and continue counting the next group of objects without pausing.
- Students recognize numbers 0–10.
- Students count out objects to represent each number.
- Students draw symbols such as circles to represent each number.
- Students say the last number said to answer a "how many" question.
- Students use language such as "together" or "all of them" to refer to the whole group of objects.

Student-facing Learning Goal: Let's figure out how many there are altogether.

Materials Needed

Gather	**Copy**
- connecting cubes - two-color counters - paper 2 cubes for each group of 2 students	- copy the gameboard for each group of 2 students - copy the recording sheet for each student

Student-facing Directions and Task	**Teacher Directions**
Task statement N/A	**Center Directions** - Groups of 2 - Give each group of students a gameboard (Stage 1 or Stage 2), recording sheets, and 2 cubes. - Give students access to connecting cubes, two-color counters, and paper. - Each student rolls a cube onto the mat. - Student A adds together the two groups of dots and tells Student B the total. Student B checks their partner's work. When both

students agree, they record the total.
- Students roll the cubes again. Students take turns adding together the groups of dots.
- In Stage 2, students complete the same steps with the Stage 2 gameboard. Students represent each number and add them together.

Questions to ask during center
- How many dots are there in this group? How many dots are there in this group? How many dots are there altogether?
- If I drew one more dot, how many dots would there be?
- You figured out that there are _____ dots altogether. What is a number of dots that is less than _____? What is a number of dots that is more than _____?

Extension and Exploration Resources

IM Task: Field Day Scarcity
Materials   • pictures of water bottle, snack, and ball   • tools such as snap cubes, number lines, or number grids   • paper, pencil, scissors, and glue for each students
Actions   The teacher should pose the following question to the students: *It's field day! The sun is shining and the students are having fun playing games with their friends. Your teacher gives you $7 to spend at the school store. Here are the options of what you can buy.*

water bottle	$2

| snack | $4 |
| ball | $5 |

a. How much money would you need to buy one of everything on the list?

b. Do you have enough money to buy one of everything? How do you know? How much more money would you need to buy one of everything?

c. What can you buy using only $7? Show your work.

d. What would you choose to buy? Why?

Commentary:

The purpose of this task is for students to relate addition and subtraction problems to money in a context that introduces the concept of scarcity. *Scarcity* occurs when you want or need more than you can have. Students may want to buy everything but will discover that it is not possible with only $7 and they will have to make decisions. To help first graders solve this problem it would be helpful to have multiple pictures of each object with the price on the picture. This way, students can try all the combinations in order to discover their options using only $7. Students can use cubes, number grids, and number lines along with the pictures to assist in solving this problem.

Some students may choose to combine their money or buy, for example, a ball to share. Then they may have money leftover to buy more. This strategy should be encouraged as long as the students are able to justify their reasoning.

Solution

a. You would need $11 to buy every item on the list. Here is a solution using cubes:
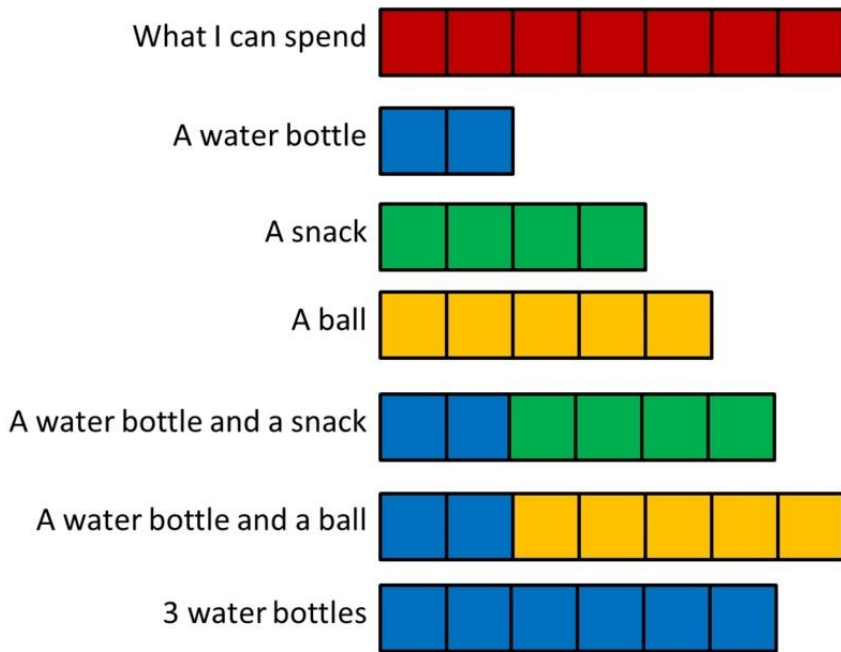

Here is a solution using a number line:

Here is a solution using a number grid:

In each case, we can see that 2+4+5=11.

b. There is not enough money to buy one of everything, because $7 is less than $11.

c. It is possible to buy any one item, or a water bottle and a snack, a water bottle and a ball, or three water bottles:

d. Answers vary. Students need to explain why they made the choice they made.

IM Task: School Supplies
Task
Priya takes some money to the store to buy school supplies. She buys some paper for $3 and a pen for $2. After she buys these supplies, she has $7 left. How much money did Priya bring to the store?

Commentary:

This task could be used for either instructional or assessment purposes, depending on where students are in their understanding of addition and how the teacher supports them. The solution shown is very terse. Students' solution strategies are likely to be much more varied.

Solution: Tape diagram

Students who are familiar with tape diagrams might use them to solve the problem by first drawing a picture:
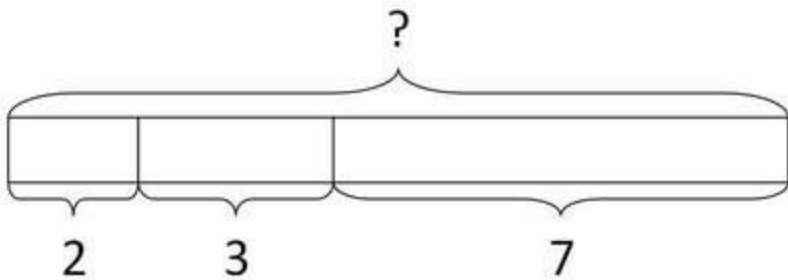
and then reasoning, "If she spent $2 + $3 dollars and had $7 left over, then she had $2 + $3 + $7 = $12 to start." There are many more strategies that students might use.

Solution: Using Addition with Objects

Students could use objects to add 2 + 3 = 5, 5 + 7 = 12

Students who have mastered fluent addition for numbers up to 12 could also add these two quantities in their head.

IM Task: Elena's Marbles

Task

   a. Kiran had 9 marbles. Elena had 5 marbles. How many more marbles did Kiran have than Elena?
      Kiran had 9 marbles. Elena had 5 marbles. How many fewer marbles did Elena have than Kiran?
   b. Kiran had 4 more marbles than Elena. Elena had 5 marbles. How many marbles did Kiran have?
      Elena had 4 fewer marbles than Kiran. Elena had 5 marbles. How many marbles did Kiran have?
   c. Kiran had 4 more marbles than Elena. Kiran had 9 marbles. How many marbles did Elena have?
      Elena had 4 fewer marbles than Kiran. Kiran had 9 marbles. How many marbles did Elena have?

Commentary:

This task includes problem types that represent the Compare contexts for addition and subtraction (see Table 1 in the glossary of the CCSSM for all all addition and subtraction problem types). There are three types of comparison problems—those with an unknown difference and two known numbers, those with a known difference and a bigger unknown number, and those with a known difference and smaller unknown number. Each of these problem types can be solved using addition or subtraction, although the language in specific problems tends to favor one approach over another.

Students benefit from encountering one problem type limited to small numbers and to develop strategies for that type of problem before encountering mixed sets of problems and larger numbers that distract the student from the problem itself. Over time they will be able to distinguish between types of problems in mixed sets and apply the appropriate strategy to solve each.

Solution

This solution is written in teacher language. Students may use objects, pictures, or equations to represent their solutions. While students are expected to add and subtract fluently within 10 at grade 1 (1.OA.6), they are not expected to add and subtract fluently within 20 until grade 2 (see 2.OA.2). The solutions show equations with a question mark representing the unknown value, but other symbols are often used. For example, $4 + ? = 9$ might also be written $4 + \underline{} = 9$ or $4 + \square = 9$.
   a. Difference Unknown:
      Kiran had 4 more marbles than Elena. (or)
      Elena had 4 fewer than Kiran.
      Possible equations: $5 + ? = 9$, $9 - 5 = ?$
   b. Bigger Unknown: Kiran had 9 marbles.
      Possible equations: $5 + 4 = ?$, $? - 4 = 5$

> c. Smaller Unknown: Elena had 5 marbles.
>   Possible equations: ? + 4 = 9, 9 − 4 = ?

IM Task: Sharing Markers

Task

a. Lin had 10 markers. She gave 3 to a friend. How many did she have left?
b. Lin had 10 markers. She gave some to a friend. Now she has 7 left. How many markers did she give to her friend?
c. Lin had some markers. She gave 3 to a friend. Then she had 7 left. How many markers did she have to start with?

Commentary:

These tasks types represent the Take From contexts for addition and subtraction (see Table 1 in the glossary of the CCSSM for all all addition and subtraction problem types). This task includes the three different problem types using the Take From context: result unknown, change unknown, and start unknown. Students need experience and practice with all three types.

Result unknown problems (a) and change unknown problems (b) are both fairly easy for most students, since they can be acted out directly. Start unknown problems (c) are the most difficult of the three for most children because they involve thinking about a situation in reverse ("undoing" the action in a situation). Guessing an initial amount then trying it out to see if it works is another possible strategy.

The solutions below are written in teacher language. Students may use objects, pictures, or equations to represent their solutions. While students are expected to add and subtract fluently within 10 at grade 1 (1.OA.6), they are not expected to add and subtract fluently within 20 until second grade (see 2.OA.2).

The solutions show equations with a question mark representing the unknown value, but other symbols are often used. For example, 10 − ? = 7 might also be written 10 − _____ = 10 or 10 − □ = 7.

Solution

a. Result Unknown: Lin had 7 markers left.
   Possible equation: 10 – 3 = ?
b. Change Unknown: Lin gave 3 markers to her friend.
   Possible equation: 10 – ? = 7
c. Start Unknown: Lin had 10 markers to start with.
   Possible equation: ? – 3 = 7