Illustrative Mathematics®
LEARN MATH FOR LIFE

GRADE 1

Teacher Guide

UNIT

2

Certified by Illustrative Mathematics®

K5_vII

20231010

Section C: Compare Story Problems

Standards

Building On	**K.CC.B.4, K.CC.C.6**
Addressing	**1.MD.C.4, 1.OA.A.1, 1.OA.C.5, 1.OA.C.6**
Building Towards	**1.OA.A.1, 1.OA.C.5, 1.OA.C.6, 1.OA.D.7**

Goals

- Relate addition and subtraction.
- Solve Compare, Difference Unknown story problems.

Narrative

In this section, students solve Compare, Difference Unknown story problems, reinforcing their understanding of the relationship between addition and subtraction.

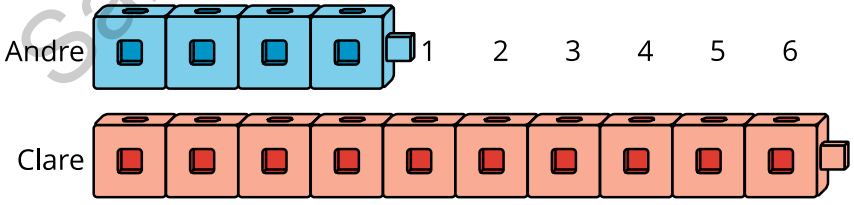
Like Put Together/Take Apart problems, Compare problems are about a relationship, rather than an action that is easy to connect to adding to or taking from. Another challenge with Compare problems is that one of the quantities in the relationship (the difference) is not there physically. To top it off, the language of the problems can be more complex and ambiguous.

For these reasons, students begin this section by revisiting the "are there enough?" problems they solved in kindergarten to practice comparing quantities using the language "more" and "fewer." Students then solve "how many more?" and "how many fewer?" problems in contexts that elicit matching strategies. Students are asked to identify which quantity has "more" or "fewer" and "how many more" and "how many fewer".

There are 9 dry erase boards at the table.
There are 6 markers.
Are there more dry erase boards or more markers?
How many more?

Matching strategies help students visualize the relationships involved. Students make sense of the bigger amount and the smaller amount. They understand the difference to be the answer to "how many more?" or "how many fewer?"

For example, "How many more cubes does Clare have than Andre?"



In this case, students may count the cubes in Clare's tower that are unmatched. Some may add cubes physically to Andre's tower to make it the same as Clare's. Others may remove the matched cubes (4) and count the remaining cubes in Clare's tower.

Students relate the ways to find the difference in Compare problems to the unknown addend problems they solved in

the previous section. After the teacher annotates, students analyze both addition ($4 + \boxed{6} = 10$) and subtraction ($10 - 4 = \boxed{6}$) equations that can be used to represent the same problem. As students compare different ways to identify the difference, they deepen their understanding of subtraction as an unknown addend problem.

Section C Checkpoint

Teacher Instructions

For this *Checkpoint Assessment*, a full checklist for observation of students can be found in the Assessments for this unit. The content assessed is listed below for reference.

Compare Story Problems

- Solve Compare, Difference Unknown problems.
  - Retell the story.
  - Represent the story with objects or drawings.
  - Explain how their representation matches the story.
  - Answer the question correctly.
- Relate addition and subtraction.

Practice Problems

7 Problems

1 from Unit 2, Lesson 11

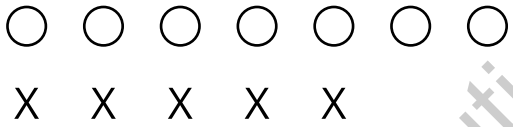
Student Task Statement

There are 7 dogs.
There are 5 toys.
Are there enough toys for each dog?

Show your thinking using drawings, numbers, or words.

Solution

No. Sample response:



2 from Unit 2, Lesson 12

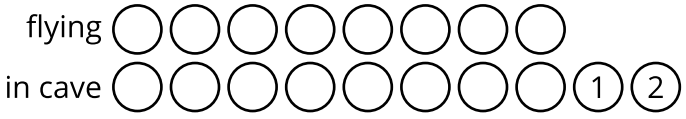
Student Task Statement

There are 10 bats in the cave.
There are 8 bats flying outside.
Are there fewer bats in the cave or flying outside?
How many fewer?

Show your thinking with drawings, numbers, or words.

Solution

2 fewer bats. Sample response:



3 from Unit 2, Lesson 13

Student Task Statement

Here are the colors of some hot air balloons that Tyler sees at a show.

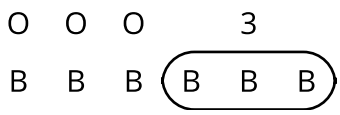
yellow	orange	blue
8	3	6

a. How many more blue balloons does Tyler see than orange balloons? Show your thinking using drawings, numbers, or words.

b. How many fewer blue balloons does Tyler see than yellow balloons? Show your thinking using drawings, numbers, or words.

Solution

a. 3 more blue balloons. Sample response:



b. 2 fewer blue balloons. Sample response: I counted 6 ...7, 8.

4 from Unit 2, Lesson 14

Student Task Statement

Jada's tower has 8 cubes.
Mai's tower has 2 cubes.
Show 2 ways to find how many more cubes Jada has.
Show your thinking using objects, drawings, numbers, or words.

Solution

Sample response:

- Student shows drawing 6 more cubes to a tower of 2 cubes and counting the added cubes.
- Student shows drawing a tower of 8 cubes, crossing off 2 cubes, and counting the remaining cubes.

5 from Unit 2, Lesson 15

Student Task Statement

7 hedgehogs are underground.

4 hedgehogs are on the grass.
How many fewer hedgehogs are on the grass?
Show your thinking using drawings, numbers, or words.

Solution

3 fewer hedgehogs. Sample responses:

- Student draws a row of 7 shapes and a row of 4 shapes underneath and counts the shapes that do not match.
- I counted 4 … 5, 6, 7. There are 3 more hedgehogs underground.
- $7 - 3 = 4$

6 Exploration

Student Task Statement

8 stuffed animals are on the bed.
3 stuffed animals are on the floor.
Your teacher asks a question about this story problem.
The answer to the question is 5.
What could the question be?

Solution

Sample response: How many more stuffed animals are on the bed than on the floor?

7 Exploration

Student Task Statement

Find 2 sets of objects at home or at school. Write a story comparing them.

Solve your problem. Write an equation that matches the story.

Solution

Sample response: My sister has 8 pillows on her bed. I have 5 pillows on my bed. How many fewer pillows are on my bed than on my sister's bed? There are 3 fewer pillows on my bed, $5 + 3 = 8$.

Unit 2, Lesson 11

Are There Enough?

Standards

Building On	**K.CC.B.4, K.CC.C.6**
Addressing	**1.OA.A.1**
Building Towards	**1.OA.A.1**

Instructional Routines

- Act It Out

Goals

- Describe (orally) the difference between a larger quantity and a smaller quantity using "1 more" or "1 fewer."
- Explain (orally) methods for representing an "are there enough?" problem.

Student Facing Learning Goals

Let's figure out if there are enough.

Lesson Purpose

The purpose of this lesson is for students to represent and solve "are there enough?" problems in a way that makes sense to them and use "1 more" or "1 fewer" to compare objects.

Narrative

In kindergarten, students compared quantities and answered "are there enough?" questions. They compared numbers and quantities using "1 more" and "1 less" or "1 fewer." In this lesson, students revisit the structure and language of these compare situations to prepare for solving Compare, Difference Unknown problems in upcoming lessons. Throughout the lesson, listen for the different ways students describe the quantities in the story problems and activities and how they describe the difference using informal and formal language.

Access For Students with Disabilities

- Engagement

Access For English Learners

- MLR8

Required Materials

Materials To Gather

- 10-frames: Activity 1
- Connecting cubes: Activity 1, Activity 2
- Two-color counters: Activity 1

Lesson Timeline

Warm-up	10 mins
Activity 1	20 mins
Activity 2	20 mins
Synthesis Estimate	10 mins

Teacher Reflection Questions

In upcoming lessons, students will represent and solve Compare, Difference Unknown story problems. How will the work of this lesson help prepare students to make sense of questions that ask "how many more?" and "how many fewer?" How will the matching strategies elicited by the contexts in this lesson help students make sense of the relationships between a bigger quantity, a smaller quantity, and their difference?

Warm-up

10 mins

Act It Out: Art Project

Standards

Building Towards **1.OA.A.1**

Instructional Routines

- Act It Out

The purpose of this *Warm-up* is to allow students to connect language to mathematical representation, which will be useful when students make sense of, represent, and solve story problems in a later activity. Although the Compare, Difference Unknown stories that students will solve in later lessons do not involve actions, the "are there enough?" context of this problem elicits matching strategies that will be helpful as students make sense of ways to represent and discuss the difference.

This *Warm-up* gives students opportunities to make sense of problems (MP1).

Student Task Statement

Mai passes out crayons for an art project.
There are 8 students waiting for crayons.
Mai has 7 packs of crayons.

How can you act out this story?

Student Response

Sample responses:

- We could have 8 students pretend to be the students waiting for crayons. We could have someone pretend to be Mai and pass out 7 packs of crayons.
- We could use counters to represent the 8 students waiting and 7 blocks to be the packs of crayons.

Launch

- Groups of 2
- Display and read the story.
- "What is the story about?"
- 30 seconds: quiet think time
- Share responses
- Read the story again.
- "How can you act out this story?"
- 30 seconds: quiet think time

Activity

- "Discuss your thinking with your partner."
- 1 minute: partner discussion
- Share responses.
- Choose a way to represent the story as a class.
- Read the story together.

Activity Synthesis

- "What are other ways we could represent this problem?" (Use cubes or counters to act it out. Draw a picture.)

Activity 1

20 mins

Are There Enough?

Standards

Building On	**K.CC.C.6**
Building Towards	**1.OA.A.1**

The purpose of this activity is for students to represent "are there enough?" story problems in a way that makes sense to them and to describe the relationships between the quantities in the problem. The contexts in this activity are intentionally designed to elicit matching strategies from students. Look for the ways students show that there are or are not enough. Listen for and highlight the ways students represent and describe how they see the bigger quantity, the smaller quantity, and the difference using informal language. In the *Synthesis*, students have opportunities to describe the relationship between the bigger and smaller quantity using both "1 more" and "1 fewer."

Access for Students with Disabilities

Engagement: Provide Access by Recruiting Interest. Invite students to share examples of situations from their own lives when they had to determine if there were enough of something.
Supports accessibility for: Conceptual Processing, Social-Emotional Functioning

Required Materials

Materials To Gather

- 10-frames: Activity 1
- Connecting cubes: Activity 1
- Two-color counters: Activity 1

Student Task Statement

1. There are 9 markers in a bin.
   There are 4 caps for the markers.
   Are there enough caps for the markers?

   Show your thinking using drawings, numbers, or words.

2. There are 9 students at the table.
   There are 8 pencils.
   Are there enough pencils for every student?

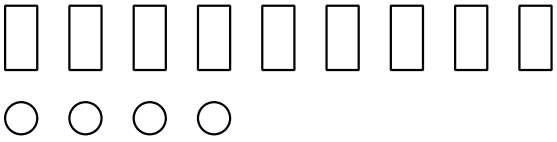
   Show your thinking using drawings, numbers, or words.

3. There are 6 students.
   There are 8 chairs.
   Are there enough chairs for every student?

   Show your thinking using drawings, numbers, or words.

Student Response

1. No. Sample responses:

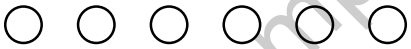


   -
   - 9 is much more than 4.

2. No. Sample responses:

   - 
   - 8 is 1 less than 9.

3. Yes. Sample responses:



   - 
   - 8 is 2 more than 6.

Launch

- Groups of 2
- Give students access to 10-frames, two-color counters, and connecting cubes.
- "Let's solve some more story problems and think about ways we can show that there are enough or there are not enough."

Activity

- Read the story about the markers and caps.
- "Are there enough caps for the markers? Use objects, drawings, words, or numbers to show your thinking. Be prepared to share your thinking with your partner."
- 2 minutes: independent work time
- 2 minutes: partner discussion
- Monitor for the different ways students represent the markers and caps that show thinking about matching.
- Invite 1–2 partners to share.
- Read the story about pencils.
- "Are there enough pencils for the students? Use objects, drawings, words, or numbers to show your thinking. Be prepared to share your thinking with your partner."
- Monitor for students who:
  - Use objects or draw to match students to pencils.
  - Describe how many more pencils would be needed or how many students would not get a pencil.
- 2 minutes: independent work time
- 2 minutes: partner discussion
- If time, repeat with the third problem.

Activity Synthesis

- Reread the second problem.
- "Are there enough pencils for every student? How do you know?"
- Invite students to share their representations.
- "How many more pencils would we need to have enough? Explain how you know." (We would need 1

more. I can see in my drawing that there's 1 student who doesn't have a pencil. I know 9 is 1 more than 8.)

- Highlight the use of 1 more or 1 fewer in student responses.
- "We need 1 more pencil for there to be enough. We could say there is 1 more student than pencils."
- Display: There is 1 fewer _____ than ____.
- "How could we use 'fewer' to describe the pencils and students in the problem?"

Advancing Student Thinking

If students answer the "are there enough?" questions with a *yes* or *no* without showing why, consider asking:

- "Are there enough __? How do you know?"
- "How could you create a drawing to show someone that there are (or are not) enough?"

Activity 2

20 mins

More or Fewer?

Standards

Building On	**K.CC.B.4, K.CC.C.6**
Building Towards	**1.OA.A.1**

The purpose of this activity is for students to practice using the words "more" and "fewer" to compare the quantities of objects. Students are familiar with describing numbers and quantities of objects using "1 more," "1 less", or "1 fewer" from kindergarten. This lesson intentionally encourages the use of "fewer" to prepare students to make sense of Compare, Difference Unknown story problems that ask, "How many fewer?" in upcoming lessons.

This activity helps revisit kindergarten concepts and build a common experience for all students to understand that "how many more?" and "how many fewer?" questions are both asking about the difference between a bigger quantity and a smaller quantity.

Access for English Language Learners

MLR8 Discussion Supports. Display the following sentence frames to support small-group discussion: "You made a tower that has 1 ____ cube than my tower." and "I know this because. . . ."
.Advances: Speaking, Conversing, Representing

Required Materials

Materials To Gather

- Connecting cubes: Activity 2

Required Preparation

- Each student needs 10 connecting cubes.

Student Task Statement

1. 1 more or 1 fewer?
2. 1 more or 1 fewer?
3. 1 more or 1 fewer?
4. 1 more or 1 fewer?
5. How many more or how many fewer?
6. How many more or how many fewer?
7. How many more or how many fewer?
8. How many more or how many fewer?

Student Response

Sample responses for 1–4:

- You made a tower that has 1 more cube than mine. I know because when you hold them next to each other, yours is 1 cube longer.
- You made a tower that has 1 fewer cube than mine. I know because when you hold them next to each other, yours is 1 cube shorter.
- You made a tower that has 1 more cube than mine. I know because I know I made a tower with 5 and yours has 6. I know 6 is 1 more.

Sample responses for 5–8:

- You made a tower that has 3 more than mine. I know because when you hold them next to each other, yours is 3 cubes longer.

Launch

- Groups of 2
- "Let's play a game to practice comparing using 'more' and 'fewer.'"
- "Let's play one round together."
- Invite a student to play as your partner.
- "First, one person builds a tower with the cubes and tells their partner how many cubes are in the tower."
- Make a tower with 7 cubes and say, "I made a tower with 7 cubes."
- "Then their partner makes a new tower with either 1 fewer or 1 more cube than their partner's tower."
- Invite your partner to make a tower that is 1 more or 1 fewer.
- Display your tower and your partner's new tower next to each other.
- "Now, you tell your partner whether they made a tower with 1 more cube or 1 fewer cube."
- "My partner made a tower that has 1 more/fewer cube than my tower."
- If the student partner did not create a tower with 6 cubes, display a tower of 6 cubes and invite students to practice using "1 fewer" to describe the towers.
- Give each student 10 connecting cubes.
- "Now it is your turn to play with your partner."

Activity

- "Each partner should get two turns to make a tower first and two turns to make 1 more or 1 fewer. After you decide whether the towers are 1 more or 1 fewer, use drawings, words, or numbers to show how you know."
- 5–6 minutes: partner work time
- "Now let's play a new way. One partner will make a tower just like before. Their partner can make a tower that has more or fewer cubes. It could be more than 1 more or more than 1 fewer cubes. Do not make a tower that is more than 4 more or more than 4 fewer."
- "When you both have made a tower. Work together to show how many more or how many fewer are in the second partner's tower."
- As needed, demonstrate the new rules.

- 3–5 minutes: partner work time
- Monitor for the ways students identify and describe how many more or how many fewer using matching strategies.

Activity Synthesis

- Invite 2–3 groups to share an example of how they played.
- As each group shares, ask:
  - "How can we tell that the towers are not the same?"
  - "How did you decide if your partner's tower showed more or fewer cubes?"
  - "How did you decide how many more or how many fewer?"

Lesson Synthesis

"Today we answered "are there enough?" questions. We shared different ways we could see whether there were 1 more or 1 fewer."

Display the story from the *Warm-up* and the list of ways students shared they could represent the story.

"Pick one of the ways we shared to represent the story. How could you describe this story using '1 more' or '1 fewer'?"

Observation

Lesson Observations for Unit 2, Section C

Standards

Addressing **1.OA.A.1**

Look Fors

- Answer the question correctly.
- Explain how their representation matches the story.
- Represent the story with objects or drawings.
- Retell the story.

How Many More? How Many Fewer?

Standards

Addressing **1.OA.A.1, 1.OA.C.5, 1.OA.C.6**

Instructional Routines

- How Many Do You See?
- MLR6 Three Reads

Goals

- Comprehend (orally and in writing) the "difference" between quantities refers to the answer to "how many more?" or "how many fewer?"
- Describe (orally) the quantities in Compare, Difference Unknown problems and solve the problems.

Student Facing Learning Goals

Let's find the difference between quantities.

Lesson Purpose

The purpose of this lesson is for students to solve Compare, Difference Unknown story problems in a way that makes sense to them.

Narrative

Students build on the representations and language they used in the previous lesson, where they solved "are there enough?" problems and compared different quantities of connecting cubes. In this lesson, students make sense of the structure of Compare problems and the relationship between the quantities.

The first activity uses the *Three Reads* routine to help students better understand the story problem by describing the bigger quantity, the smaller quantity, and the difference. Throughout the lesson, the Compare problems use contexts that elicit matching. The questions are also structured to invite students to first identify which quantity is bigger or smaller, and then determine the difference. The *Lesson Synthesis* introduces the term "difference" as an answer to "how many more?" or "how many fewer?" The term will be used throughout the unit in this way, although students are not expected to produce it.

Access For Students with Disabilities

- Representation

Access For English Learners

- MLR7

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 1, Activity 2

Lesson Timeline

Warm-up	10 mins
Activity 1	15 mins
Activity 2	20 mins
Synthesis Estimate	10 mins
Cool-down	5 mins

Teacher Reflection Questions

How effective were your questions in supporting students' thinking today? What did students say or do that showed they were effective?

Warm-up

10 mins

How Many Do You See: 10-frames

Standards

Addressing **1.OA.C.5, 1.OA.C.6**

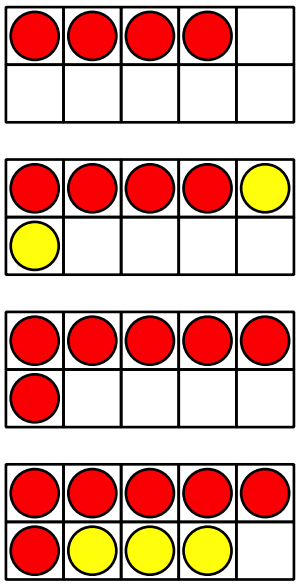
Instructional Routines

- How Many Do You See?

The purpose of this *How Many Do You See?* is to support students in gaining fluency with sums within 10. In this activity, students have an opportunity to notice and make use of structure (MP7) because they can use the structure of the 10-frame. The images also invite counting on and using language from previous lessons around a total and two parts.

Student Task Statement

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



Student Response

Sample responses:

- 4: I see 2 and 2.
- 6: I see 4 and 2 more.
- 6: It's the same as the last one.
- 9: I know it's 9 because there is 1 missing from the 10-frame.

Launch

- Groups of 2
- "How many do you see? How do you see them?"
- Flash the first image.
- 30 seconds: quiet think time

Activity

- Display the image.
- "Discuss your thinking with your partner."
- 1 minute: partner discussion
- Record responses.
- Repeat for each image.

Activity Synthesis

- "Did anyone see the dots the same way but would explain it differently?"

Activity 1

15 mins

Get Out Your Dry Erase Boards

Standards

Addressing **1.OA.A.1, 1.OA.C.5**

Instructional Routines

- MLR6 Three Reads

The purpose of this activity is for students to solve a modified Compare, Difference Unknown story problem. The problem asks students to compare the quantities in the problem and then determine the size of the difference. The problem context also intentionally elicits matching strategies. Students begin the activity by looking at the problem displayed, rather than in their books. They make sense of the bigger amount and smaller amount before working on the problem, giving them an entry point for addressing both - "are there more?" and "how many more?" questions. When students open their books and work on the problem, they should have access to connecting cubes or two-color counters. In the *Activity Synthesis*, highlight the ways students describe how they represent each amount and how they

see the difference (“how many more?”) in their representations.

This activity uses *MLR6 Three Reads*. Advances: reading, listening, representing.

Access for English Language Learners

MLR7 Compare and Connect. Synthesis: After all methods have been presented, lead a discussion comparing, contrasting, and connecting the different approaches. Ask, “How are the methods similar? How are they different?”
Advances: Representing, Conversing

Required Materials

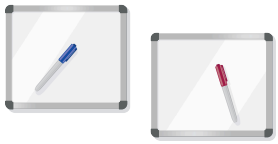
Materials To Gather

- Connecting cubes or two-color counters: Activity 1

Student Task Statement

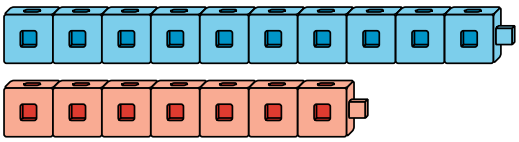
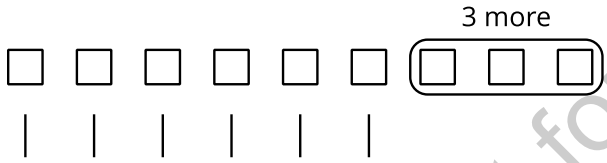
There are 9 dry erase boards.
There are 6 markers.
Are there more dry erase boards or more markers? How many more?

Show your thinking using drawings, numbers, or words.



Student Response

3 more dry erase boards. Sample responses:

- 
- 

Launch

- Groups of 2
- Give students access to connecting cubes or two-color counters.

Activity

MLR6 Three Reads

- Display only the problem stem, without revealing the questions.
- "We are going to read this problem three times."
- 1st Read: "There are 9 dry erase boards. There are 6 markers."
- "What is this story about?"
- 1 minute: partner discussion
- Listen for and clarify any questions about the context.
- 2nd Read: "There are 9 dry erase boards. There are 6 markers."
- "What are all the things we can count in this story?" (the dry erase boards, the markers, the total of both items)
- 30 seconds: quiet think time
- 1 minutes: partner discussion
- Share and record all quantities.
- Reveal the questions.
- 3rd Read: Read the entire problem, including questions aloud.
- "What are different ways we can solve this problem?" (I can use red connecting cubes for the dry erase boards and blue for the markers. I can draw circles for the dry erase boards and lines for the markers.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- "Solve the problem."
- 3 minutes: independent work time
- "Share your thinking with your partner."
- 2 minutes: partner discussion
- Monitor for students who represent the problem by matching the quantities and can describe how their representation shows how many more.

Activity Synthesis

- Invite 1–2 previously identified students to display and share their work.
- For each student, ask:
  - "Where do you see how they showed the bigger amount?"
  - "Where do you see how they showed the smaller amount?"
  - "Where do you see how many more?"
- As needed, ask, "How did they figure out how many more?"

Advancing Student Thinking

If students represent the bigger and smaller amounts, but indicate that they may not be sure what to do next, consider asking:

- "What have you done so far to represent the problem?"
- "Did you show there are more dry erase boards or more markers? How many more?"

Activity 2

20 mins

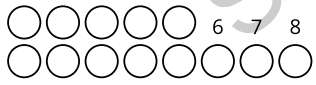
Compare Problems

Standards

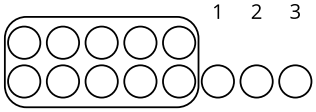
Addressing **1.OA.A.1, 1.OA.C.5**

The purpose of this activity is for students to represent and solve Compare, Difference Unknown story problems. The problems in this activity continue to ask students to identify which quantity has more (or fewer) and how many more (or fewer) as separate questions. However, the contexts do not explicitly involve matching.

In addition to the different ways students may choose to represent the problem, listen for the ways they determine how many more or fewer. For example, students may think about determining the difference in the following ways or may come up with a different way of thinking about the difference.



Count on from the smaller quantity to the larger quantity.
($5 + \boxed{3} = 8$)



Match the sets and then count how many don't have a partner. ($8 - 5 = \boxed{3}$)

The equations in parenthesis illustrate a way you could annotate student thinking as they share in the *Synthesis*. Students are not expected to produce equations at this point in the unit.

Access for Students with Disabilities

Representation: Access for Perception. Provide appropriate reading accommodations and supports to ensure student access to story problems.
Supports accessibility for: Language, Visual-Spatial Processing

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 2

Student Task Statement

1. There are 7 folders.
   There are 9 pens.
   Are there fewer folders or pens?
   How many fewer?

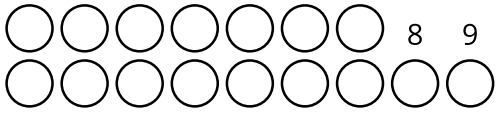
   Show your thinking using drawings, numbers, or words.

2. There are 5 pencils.
   There are 8 markers.
   Are there more pencils or markers?
   How many more?

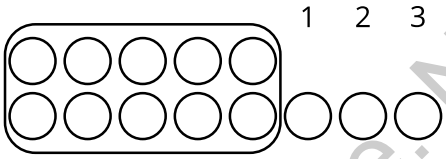
   Show your thinking using objects, drawings, numbers, or words.

Student Response

1. 2 fewer folders. Sample response:



2. 3 more markers. Sample response:



Launch

- Groups of 2
- Give students access to connecting cubes or two-color counters.
- Read the story problem about the folders.
- As needed:
  - "Tell your partner what this story is about and what we have to answer."
  - 1 minute: partner discussion
  - Monitor for students who accurately retell the story without revealing the answer. Choose at least one student to share with the class.

Activity

- Reread the story problem about the folders.
- "Solve the problem with your partner. Show your thinking using objects, drawings, numbers, or words."
- 2–4 minutes: partner work time
- Consider asking:
  - "How did you show the folders?"
  - "How did you show the pens?"
  - "How did you figure out how many fewer folders?"
- Monitor for the different ways students represent the folders and discuss how they determined "how many fewer?"
- Invite 1–2 partners to share.
- Read the story about pencils and markers.
- "Solve the problem. Use objects, drawings, words, or numbers to show your thinking. Be prepared to share your thinking with your partner."
- 2 minutes: independent work time
- 2 minutes: partner discussion
- Monitor for students who describe:
  - Counting on from the smaller quantity to the larger quantity.
  - Matching the smaller quantity to the larger quantity and counting what is left.

Activity Synthesis

- Invite previously identified students to share.
- "How is their work the same? How is it different?" (They both showed 5 pencils and 8 markers. They both thought about lining them up. One shows counting from the pencils to the markers. The other just matches everything and counts what is left.)
- "Where is the answer to "how many more?" in each representation?" (The answer is the same. It's the number that counted on or that isn't matched up.)

Lesson Synthesis

"Today we solved a new kind of story problem. How were these problems the same as the problems you solved in the past? How are they different?" (They are like "are there enough?" problems, we just have to answer "how many more?" or "how many fewer?" They were the same as problems we did before because we could think about how much more to add. It's like an unknown addend problem. They were different because we were comparing quantities instead of putting them together or taking them apart. There are no actions.)

"Story problems that are about comparing amounts do not have actions. Nothing is added to something else or taken away in the story."

"Today we saw that we can think about the amount that is bigger and the amount that is smaller. We saw different ways we can represent the bigger amount and the smaller amount with objects or drawings to answer 'how many more?' or 'how many fewer?'"

"We call the amount that answers "how many more?" or "how many fewer?" the difference."

"Compare problems have a bigger amount, a smaller amount, and a difference."

Cool-down

5 mins

Let's Paint

Standards

Addressing **1.OA.A.1**

Student Task Statement

There are 6 students.
There are 4 paint brushes.
Are there more students or paint brushes?
How many more?

Show your thinking using drawings, numbers, or words.

Student Response

2 more students. Sample response: Student draws 6 circles in a row and 4 lines underneath the first 4 circles. Student labels to show 2 more students than paint brushes.

Responding To Student Thinking

Students write an answer other than 2 for how many more students there are than paint brushes.

Next Day Supports
During the *Warm-up in the next lesson*, have students share methods for figuring out how many more there are in one category than another. Discuss how this relates to the problem in the *Cool-down*.

Unit 2, Lesson 13

Compare Data

Standards

Addressing **1.MD.C.4, 1.OA.A.1, 1.OA.C.5**

Instructional Routines

- Notice and Wonder

Goals

- Explain (orally) strategies for solving Compare, Difference Unknown problems within a data context.
- Interpret (orally) Compare, Difference Unknown problems as unknown addend problems.

Student Facing Learning Goals

Let's compare data.

Lesson Purpose

The purpose of this lesson is for students to solve Compare, Difference Unknown story problems in a data context.

Narrative

The work of this lesson connects to previous lessons in which students solved Compare, Difference Unknown story problems in a way that made sense to them. The context of data revisits previous work in Grade 1 and encourages students to consider more abstract contexts that involve comparison.

Students first interpret whether statements about data represented with discrete images are true. They then must answer "how many more?" and "how many fewer?" questions about data represented by numbers in a table.

Throughout the lesson, students continue to make sense of ways to represent the relationship between the bigger quantity, smaller quantity, and difference, including making sense of Compare problems as an unknown addend problem. When students connect the quantities in the story problem to an expression or equation, they reason abstractly and quantitatively (MP2).

Access For Students with Disabilities

- Representation

Access For English Learners

- MLR8

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 1, Activity 2

Lesson Timeline

Warm-up	10 mins
Activity 1	20 mins
Activity 2	15 mins
Synthesis Estimate	10 mins
Cool-down	5 mins

Teacher Reflection Questions

Which math ideas from today's lesson did students grapple with most? Did this surprise you or was this what you expected?

Warm-up

10 mins

Notice and Wonder: More and Fewer

Standards

Addressing **1.MD.C.4**

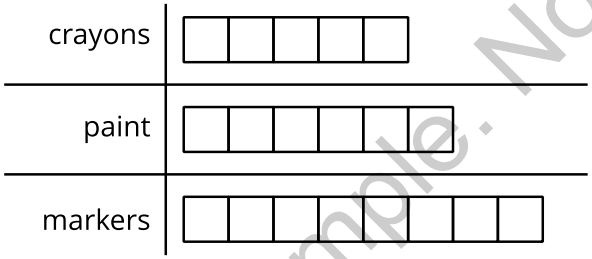
Instructional Routines

- Notice and Wonder

This *Warm-up* prompts students to consider data representations, which they worked with in a previous unit. When students articulate what they notice and wonder, they have an opportunity to attend to precision in the language they use to describe what they see (MP6). They might first use less formal or imprecise language, and then restate their observations with more precise language in order to communicate more clearly.

Student Task Statement

What do you notice?
What do you wonder?



Launch

- Groups of 2
- Display the image.
- "What do you notice? What do you wonder?"
- 1 minute: quiet think time

Activity

- "Discuss your thinking with your partner."
- 1 minute: partner discussion
- Share and record responses.

Student Response

Students may notice:

- It's a chart that uses squares to show data.
- There are 3 art supplies listed in the chart.
- Markers have the most squares.

Students may wonder:

- What is the title of the chart?
- How do the boxes represent?
- Why does paint have more squares than crayons?

Activity Synthesis

- "What could the title of this diagram be?"

Activity 1

20 mins

Compare Data (Part 1)

Standards

Addressing **1.MD.C.4, 1.OA.A.1, 1.OA.C.5**

The purpose of this activity is for students to determine whether comparison statements about data are true or false and to explain how they know. Students build on their work with asking and answering "how many in all?" questions about data and on their work with solving Compare story problems. The statements in the activity are intentionally sequenced from those that invite students to show what they know about determining the bigger or smaller quantity to those that show what students know about determining the difference.

Students are asked to explain how they know whether the statements are true or false. They may use matching techniques to compare the data using the discrete diagrams on the chart provided or they may use objects or self-created drawings.

Access for Students with Disabilities

Representation: Access for Perception. Provide access to connecting cubes. Ask students to identify correspondences between the data in the chart and a tower of connecting cubes.
Supports accessibility for: Visual-Spatial Processing, Attention

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 1

Student Task Statement

A group of students is asked, "Which is your favorite art supply?"
Their responses are shown in this chart.

Favorite Art Supply

crayons	
paint	
markers	

1. More students voted for crayons than markers.

True or False

2. Fewer students voted for crayons than paint.

True or False

3. 1 more student voted for paint than crayons.

True or False

Show your thinking using drawings, numbers, or words.

4. 1 fewer student voted for paint than markers.

True or False

Show your thinking using drawings, numbers, or words.

Launch

- Groups of 2
- Give students access to connecting cubes or two-color counters.

Activity

- Read the *Task Statement*.
- "Priya and Han made some statements about their data. Your job is to decide whether you agree or disagree. Once you decide, circle it on your paper."
- Read the first comparison statement.
- 30 seconds: independent work time
- "Now, explain to your partner how you know."
- 1 minute: partner discussion
- Repeat with the second statement.
- Read the third statement.
- "After you decide whether you agree or disagree, show your thinking using drawings, numbers, or words. Be ready to share with your partner."
- 1–2 minutes: independent work time
- "Now, explain to your partner how you know."
- 1 minute: partner discussion
- Repeat with the remaining statements.
- Monitor for the different ways students represent and explain their thinking for the last statement to share in the *Synthesis*.

Activity Synthesis

- Invite 1–2 previously identified students to share.
- Consider asking:
  - "Are there more votes for markers than crayons? How can you tell?"
  - "Are there three more votes for markers than crayons? How can you tell?"
- Display 5 + 3 = 8.
- "Is this equation true? How do you know?"
- "How does the equation match the statement 'Three more students voted for markers than crayons'?"
- Consider asking:
  - "How does the equation show the bigger

5. 3 more students voted for markers than crayons.

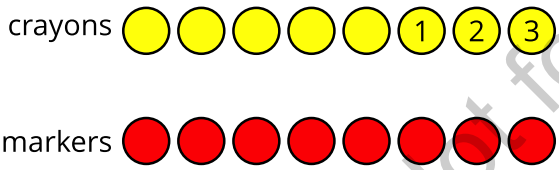
True or False

Show your thinking using drawings, numbers, or words.

If you have time: Change the false statements to make them true.

Student Response

1. False.
2. True.
3. True. Sample response: I can see the squares for paint right below the squares for crayons. There's 1 more square for paint.
4. False. Sample response: There are fewer votes for paint, but I can see there are 2 fewer, not 1 fewer.
5. True: Sample response:



If you have time: Sample responses: More students voted for markers than crayons. 2 fewer students voted for paint than markers.

amount?"

- "How does it show the smaller amount?"
- "How does it show the difference, or 'how many more?'"

Activity 2

15 mins

Compare Data (Part 2)

Standards

Addressing **1.MD.C.4, 1.OA.A.1, 1.OA.C.5**

The purpose of this activity is for students to solve Compare, Difference Unknown problems about data that include the language, "more" and "fewer." Many students may continue to use matching techniques to compare the data using objects and drawings, while others may try counting on from the smaller quantity to the bigger quantity. During the *Synthesis*, continue to highlight the ways students see the difference in a drawing and relate it to solving an unknown addend problem (MP2). Students may want to tear out the page in their book with the data, so they can have it more

readily available while working on each problem.

Access for English Language Learners

MLR8 Discussion Supports. Revoice student ideas to demonstrate and amplify mathematical language use, encouraging “more” and “fewer.” For example, revoice the student statement “three" as "three more students" or "Three more students voted for crayons than markers."
Advances: Listening, Speaking, Conversing

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 2

Student Task Statement

Another group of students is asked, "Which is your favorite art supply?"
Their responses are shown in this chart.

Favorite Art Supply

crayons	paint	markers
10	8	7

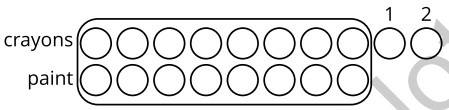
Favorite Art Supply

crayons	paint	markers
10	8	7

1. How many more students voted for crayons than paint?
   Show your thinking using drawings, numbers, or words.
2. How many fewer students voted for markers than paint?
   Show your thinking using drawings, numbers, or words.
3. How many more students voted for crayons than markers?
   Show your thinking using drawings, numbers, or words.

Student Response

1. 2 more students. Sample response:



2. 1 fewer student. Sample response: I know 7 is 1 less than 8.
3. 3 more students. Sample response: I counted 7 ... 8, 9, 10. 3 more.

Launch

- Groups of 2
- Give students access to connecting cubes or two-color counters.
- Display Favorite Art Supply data (do not include the problems).
- "What questions might you ask about this data?"
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.

Activity

- Read the *Task Statement*.
- "Now you are going to answer some questions about the data."
- 5 minutes: independent work time
- As needed, read each question to students.
- "Share your thinking with a partner."
- 5 minutes: partner discussion
- Monitor for students who represent and solve the last problem by:
  - Using objects or drawings to represent each amount and count the difference.
  - Using objects (including fingers) or drawings to represent counting on from the smaller quantity to the bigger quantity.

Activity Synthesis

- Invite previously selected students to share how they found how many more crayons than makers.
- If no students use letters to represent each object, consider recording:
  - C C C C C C C C C C
    M M M M M M M
  - "How does this represent the markers and crayons? How can we see how many more crayons?"
- "How does $7 + \square = 10$ represent the problem?"
- Consider asking:
  - "How does the equation show the bigger

amount?"

- "How does it show the smaller amount?"
- "How does it show the difference, or 'how many more?'"

Lesson Synthesis

Display the chart from the previous activity.

Display "How many fewer students voted for markers than crayons?"

"How is this question the same as the last question we answered? How is it different? (It's comparing crayons and markers. The answers is the same. It uses "fewer" instead of "more.")

Display: $7 + \square = 10$

"How does this equation represent finding how many fewer students voted for markers than crayons?" (It shows 7 votes for markers plus 3 more votes is 10 votes, the number of votes crayons got.)

"When you compare two numbers to find how many more or how many fewer, you are finding the difference. We can think of finding the difference as an unknown addend problem."

Cool-down

5 mins

Clare's Desk

Standards

Addressing **1.MD.C.4, 1.OA.A.1**

Student Task Statement

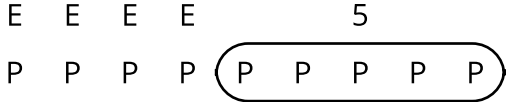
pencils	erasers	crayons
9	4	7

How many fewer erasers than pencils are there?

Show your thinking using drawings, numbers, or words.

Student Response

5 fewer erasers. Sample response:



Responding To Student Thinking

Students write a number other than 5 for how many fewer erasers there are than pencils.

Next Day Supports
After the *Warm-up* of the next lesson, invite students to represent the pencils and erasers with two-color counters. Then ask students to show how many fewer erasers than pencils.

Unit 2, Lesson 14

Compare with Addition or Subtraction

Standards

Addressing	**1.OA.A.1, 1.OA.C.5**
Building Towards	**1.OA.C.5, 1.OA.C.6, 1.OA.D.7**

Instructional Routines

- Choral Count

Goals

- Compare and contrast (orally) different strategies for determining an unknown difference.

Student Facing Learning Goals

Let's show different ways to solve story problems.

Lesson Purpose

The purpose of this lesson is for students to solve Compare, Difference Unknown story problems and deepen their understanding of subtraction as an unknown addend problem.

Narrative

In previous lessons, students solved Compare problems where the difference was within 3. They used strategies that made sense to them and interpreted Compare, Difference Unknown problems as unknown addend problems. In this lesson, students continue to make sense of Compare, Difference Unknown problems and different strategies that can be used to solve them. Connecting cubes are used as a context and a tool that can easily elicit and demonstrate strategies based on addition or subtraction. The more concrete representations are also helpful as students work with differences that are larger than 3. As students explain and compare different ways to determine the value of a difference, they deepen their understanding of the relationship between addition and subtraction. They also begin to better understand subtraction as an unknown addend problem.

Access For Students with Disabilities

- Engagement

Access For English Learners

- MLR8

Required Materials

Materials To Gather

- Connecting cubes in towers of 10 and singles: Activity 1, Activity 2

Lesson Timeline

Warm-up	10 mins
Activity 1	15 mins
Activity 2	20 mins
Synthesis Estimate	10 mins
Cool-down	5 mins

Teacher Reflection Questions

What did you say, do, or ask during the *Lesson Synthesis* that helped students be clear on the learning of the day?

Warm-up

10 mins

Choral Count: Count On

Standards

Building Towards **1.OA.C.5, 1.OA.C.6**

Instructional Routines

- Choral Count

The purpose of this *Warm-up* is to invite students to practice counting on by 1 from a given number and notice patterns in the count. In this *Choral Count* students are given which number to start at and which number to stop at. These understandings help students develop fluency and will be helpful later in this lesson when students make sense of strategies used to find an unknown difference when solving Compare problems.

Student Response

- Record each count horizontally. Start a new row underneath the first number from the previous count. For example, when starting at 3, the 3 should be recorded under the 2 from the previous count.

Sample responses:

- We said some of the same numbers every time.
- We counted 1 fewer number each time.
- When we started at a number closer to 9, we said fewer numbers.
- The list of numbers is 1 fewer each time.

Launch

- "Count by 1, starting at 2 and stopping at 9."
- Record as students count.
- Stop counting and recording at 9.
- "Count by 1, starting at 3 and stopping at 9."
- Record as students count.
- Stop counting and recording at 9.
- Repeat starting at 4.

Activity

- "What patterns do you see?"
- 1–2 minutes: quiet think time
- Record responses.

Activity Synthesis

- "What would happen if we started at 5 next? What do you think would happen if we kept going?"
- Consider asking:
  - "Who can restate the pattern in different words?"
  - "Does anyone want to add an observation on why that pattern is happening here?"

Activity 1

15 mins

Cube Towers

Standards

Addressing	**1.OA.A.1, 1.OA.C.5**
Building Towards	**1.OA.D.7**

The purpose of this activity is for students to continue to make sense of different ways to solve Compare, Difference Unknown problems. In this activity, the unknown difference is greater than in previous lessons. Connecting cube towers are used to allow students to compare different ways of determining the difference and to make connections to the operations of addition and subtraction.

Required Materials

Materials To Gather

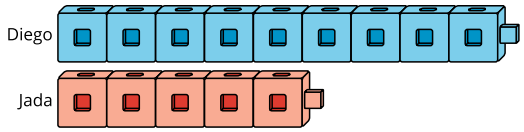
- Connecting cubes in towers of 10 and singles: Activity 1

Required Preparation

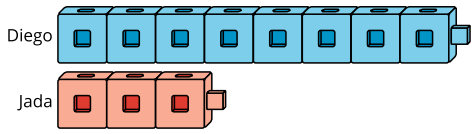
- Create a tower of 9 blue connecting cubes and a tower of 5 red connecting cubes.
- Each group of 2 needs 4 towers of 10 connecting cubes.

Student Task Statement

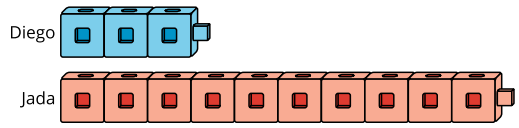
1. How many more cubes does Diego have? Show your thinking using drawings, numbers, or words.



2. How many more cubes does Diego have? Show your thinking using drawings, numbers, or words.



3. How many fewer cubes does Diego have? Show your thinking using drawings, numbers, or words.



Student Response

1. 4 more cubes. Sample response: The towers are lined up, so I counted how many more Diego had. There are 4 more.
2. 5 more cubes. Sample response: Student makes 2 towers to match, breaks off 3 cubes from Diego's tower, and counts the 5 remaining cubes.
3. 7 fewer cubes. Sample response: Student crosses out the cubes in Jada's tower that match Diego's tower and then counts the remaining cubes.

Launch

- Groups of 2
- Give each group 4 towers of 10 connecting cubes.

Activity

- "Diego and Jada are building connecting cube towers and comparing the number of cubes in their towers."
- "Work with your partner to answer each question. Show your thinking using drawings, numbers, or words. You may use the connecting cubes to help if you choose."
- 5–7 minutes: partner work time
- Consider asking:
  - "What did you do to figure out how many more/fewer cubes Diego had?"
  - "Could you show he has __ more/fewer in a different way?"
- Monitor for these different ways students use blocks or drawings to determine how many fewer cubes for the last problem:
  - Use the image provided to count the difference.
  - Add 7 cubes to a tower of 3 cubes to make them the same length.
  - Remove the 3 cubes from a tower of 10 cubes physically (or by crossing out on the image).

Activity Synthesis

- Invite previously identified students to share how they found how many fewer cubes Diego had.
- Annotate strategies that show adding on cubes to the smaller quantity or counting without explicitly removing blocks with $3 + \square = 10$.
- Annotate strategies that show removing cubes (physically or by crossing out) and counting what's left with $10 - 3 = \square$.
- "What do you notice about all these methods?" (They all got the same answer, even if they added cubes or took cubes off.)
- "What goes in the box for each of these equations?" (7)
- "The cubes help us show that we can think of Compare problems as an unknown addend problem."

- Demonstrate a students strategy with cubes by holding up a tower of 3 and a tower of 10.
- "I can think of finding the difference as figuring out how many I would have to add to 3 to be the same as 10."
- Demonstrate counting on while adding 1 cube at a time to the smaller tower.
- "The cubes can also help us show that subtraction is another way to find an unknown addend."
- Demonstrate matching the towers and removing 3 cubes as you count back.
- "How is what I just did like $10 - 3 = \square$?"
- "How does $10 - 3 = 7$ represent the bigger tower, the smaller tower, and the difference?"

Activity 2

20 mins

Cube Tower Problems

Standards

Addressing	**1.OA.A.1, 1.OA.C.5**
Building Towards	**1.OA.D.7**

The purpose of this activity is for students to solve Compare, Difference Unknown story problems in the context of connecting cube towers. Students solve comparison problems with given constraints that encourage students to add or break apart cubes to make towers with the same number of cubes. As students explain their thinking during the *Activity Synthesis*, record both addition and subtraction equations. When students answer the question, "How do you know?" they are beginning to explain their reasoning and construct viable arguments (MP3).

Access for English Language Learners

MLR8 Discussion Supports. Invite students to take turns sharing their responses. Ask students to restate what they heard using precise mathematical language and their own words. Display the sentence frame: "I heard you say . . . ." Original speakers can agree or clarify for their partner.
Advances: Listening, Speaking

Access for Students with Disabilities

Engagement: Provide Access by Recruiting Interest. Provide choice and autonomy. In addition to connecting cubes, provide access to red, yellow, and blue crayons or colored pencils students can use to represent and solve the story problems.
Supports accessibility for: Visual-Spatial Processing, Conceptual Processing

Required Materials

Materials To Gather

- Connecting cubes in towers of 10 and singles: Activity 2

Required Preparation

- Gather 1 red tower of 8 connecting cubes, 1 yellow tower of 3 connecting cubes, and a handful of yellow cubes.
- Each group of 2 needs 4 towers of 10 connecting cubes.

Student Task Statement

Work with your partner to solve each problem. One partner should try Lin's way. One partner should try Kiran's way. Show your thinking using drawings, numbers, or words.

1. Lin makes a tower with 3 cubes.
   Kiran makes a tower with 9 cubes.
   How many more cubes are in Kiran's tower?

   Lin's Way

   Think: "How many more cubes can I add to 3 cubes to get 9?"

   Kiran's Way

   Think: "How many are left if I take away 3 cubes from 9?"

2. Lin's tower has 7 cubes.
   Kiran's tower has 3 cubes.
   How many more cubes are in Lin's tower?

3. Lin's tower has 2 cubes.
   Kiran's tower has 9 cubes.
   How many fewer cubes are in Lin's tower?

Student Response

1. 6 cubes. Sample responses:
   - Lin's way: Student makes a tower with 3 cubes and a tower with 9 cubes, then counts on from 3 while adding cubes until they are the same length.
   - Kiran's way: Student makes a tower with 9 cubes, breaks off 3 cubes, and counts the remaining cubes.
2. 4 cubes. Sample responses:
   - Lin's way: Student draws 3 squares, counts on from 3 while drawing more squares until there are 7 squares. Counts 4 squares.
   - Kiran's way: Student draws a tower of 7 squares, crosses off 3 squares, and counts the remaining squares.
3. 7 cubes. Sample responses:
   - Lin's way: Student counts on from 2 to 9 using fingers or objects to keep track of how many are counted on. 2 ... 3, 4, 5, 6, 7, 8, 9.
   - Kiran's way: Student counts back 2 from 9. 9 ... 8, 7.

Launch

- Groups of 2
- Give each group 4 towers of 10 connecting cubes.
- Read the problem about Lin and Kiran's different ways of thinking.
- "Tell your partner what this story is about."
- 1 minute: partner discussion
- Monitor for students who accurately retell the difference in Lin and Kiran's thinking to share.
- Reread the story.
- "Work with your partner to show Lin's way and Kiran's way for finding how many more cubes are in Kiran's tower."
- 2–3 minutes: partner work time
- Invite 1–2 groups to share for each strategy.
- Annotate Lin's strategy with $3 + \square = 9$ and Kiran's strategy with $9 - 3 = \square$.
- "We just showed you can think about finding a difference by thinking about finding the value of an unknown addend. We showed you can find the unknown addend by subtracting."

Activity

- "Now we're going to solve some more Compare problems about cube towers. This time you are going to work with your partner and try different strategies. For each problem, one partner will try Lin's way and one partner will try Kiran's way."
- Read the second problem.
- "Decide who will use Lin's way and who will use Kiran's way, then explain what you did to your partner."
- 2–3 minutes: partner work time
- "Now, let's do one more problem. Switch who uses Lin's way and who uses Kiran's way."
- Read the last problem.
- 2–3 minutes: partner work time

Activity Synthesis

- Invite 1–2 groups to share the different ways they found the answer to the last problem.

- "What was the same about both ways of solving the problem? What was different?"
- "Which way did you like best? Why?"

Advancing Student Thinking

If students show they may be unsure how to start Lin's way or Kiran's way, consider rereading the first problem and asking:

- "How did Kiran/Lin think about finding how many more? Did they think about adding more cubes or taking away cubes?"
- "How could you add cubes/take away cubes to find the difference in this problem?"

Lesson Synthesis

"Today we used towers of cubes to compare. We used the cubes to show that you can find 'how many more' or 'how many less' by thinking about adding on to the smaller amount or by taking away the smaller amount from the bigger amount."

Display:

- One red tower of 7 connecting cubes, one yellow tower of 2 connecting cubes, and a handful of yellow connecting cubes
- $2 + \square = 7$
- $7 - 2 = \square$

"How do these equations represent these two towers of cubes?" ($2 + \square$ shows we could think of how many to add to the yellow tower to make it the same as the red tower. $7 - 2$ shows we could think about taking off the number of yellow cubes, and what's left is how many more cubes are in the red tower.)

"How do these equations show that you can find the number that makes $2 + \square = 7$ true by using subtraction?"

"How do these equations show that you can find the number that makes $7 - 2 = \square$ true by thinking about adding on?"

"Addition and subtraction are related. We can think about subtraction as taking away or as an unknown addend problem."

Cool-down

5 mins

More Cubes

Standards

Addressing **1.OA.A.1**

Student Task Statement

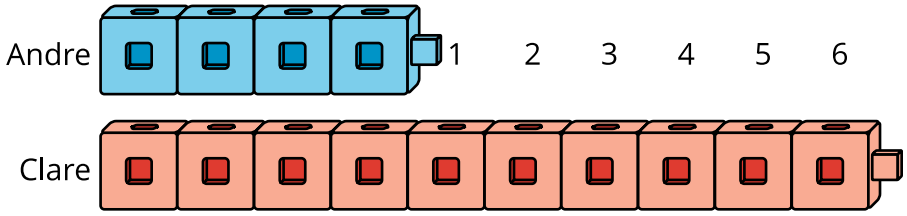
Andre has 4 cubes.
Clare has 10 cubes.

How many more cubes does Clare have?

Show your thinking using drawings, numbers, or words.

Student Response

6 more cubes. Sample response:



Responding To Student Thinking

Students find a difference other than 6 cubes.

Next Day Supports
Ask students to use connecting cubes to represent the problem. Invite students to identify the bigger tower, the smaller tower, and the difference.

Unit 2, Lesson 15

Different Types of Story Problems

Standards

Addressing **1.OA.A.1**

Building Towards **1.OA.C.6**

Instructional Routines

- Which Three Go Together?

Goals

- Represent and solve Put Together/Take Apart and Compare, Difference Unknown problems.

Student Facing Learning Goals

Let's solve different types of story problems.

Lesson Purpose

The purpose of this lesson is for students to solve a variety of story problems and discuss the relationship between subtraction and unknown addend problems.

Narrative

The work of this lesson connects to previous lessons in which students solved Add To, Change Unknown; Put Together/Take Apart story problems with unknowns in different positions; and Compare, Difference Unknown story problems in a way that makes sense to them. In those lessons, students considered addition and subtraction equations that match the same story problem. In this lesson, students solve a variety of story problem types and compare strategies. Students explain how each of these problems can be represented or solved with addition or subtraction and relate subtraction to unknown addend problems.

Access For Students with Disabilities

- Action and Expression

Access For English Learners

- MLR8

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 2
- Materials from previous centers: Activity 3

Lesson Timeline

Warm-up	10 mins
Activity 1	10 mins
Activity 2	15 mins
Activity 3	15 mins
Synthesis Estimate	10 mins

Teacher Reflection Questions

What part of the lesson went really well today in terms of students learning? What did you do that made that part go well?

Warm-up

10 mins

Which Three Go Together: Equations

Standards

Building Towards **1.OA.C.6**

Instructional Routines

- Which Three Go Together?

This *Warm-up* prompts students to carefully analyze and compare features of equations. In making comparisons, students have a reason to use language precisely (MP6). The activity also enables the teacher to hear the terminologies students know and how they talk about characteristics of different equations.

During the *Synthesis*, students build on their work in the unit with addend-unknown problems to describe the relationship between a subtraction equation and an addition equation with an unknown addend. Students will continue to make sense of and begin to produce equations in the next section.

Student Task Statement

Which 3 go together?

A. $5 = 3 + \square$

B. $4 + 1 = \square$

C. $3 + 2 = 5$

D. $5 - 3 = \square$

Student Response

Sample responses:

A, B, and C go together because:
- They are addition equations.

A, B, and D go together because:
- They have an empty box.
- They have an unknown.

A, C, and D go together because:
- They have a 5 and a 3.
- They have 5 as the total and 3 as one of the parts. 2 is the other part.

B, C, and D go together because:
- The total or difference is after the equal sign.

Launch

- Groups of 2
- Display the equations.
- "Pick 3 that go together. Be ready to share why they go together."
- 1 minute: quiet think time

Activity

- "Discuss your thinking with your partner."
- 2–3 minutes: partner discussion
- Share and record responses.

Activity Synthesis

- Display Equations A and D.
- "What is the same about these equations? What is different?" (They both have 3 and 5. 5 is the total in both, and 3 is one of the parts. The unknown is 2 in both equations. One equation is addition and has an unknown addend, and the other is a subtraction equation with an unknown difference.)

Activity 1

10 mins

What Questions Can We Ask?

Standards

Addressing **1.OA.A.1**

The purpose of this activity is for students to make sense of a problem before solving it by familiarizing themselves with a context and the mathematics that might be involved (MP1). Students are asked to tell a story about an image in order to generate observations that lead them to ask mathematical questions about the context. This prepares students to solve story problems about the given context in the second activity.

Access for English Language Learners

MLR8 Discussion Supports. Display the following sentence frames to support partner discussion: "The picture shows. . . ." and "I can count. . . .", and "I can ask. . . ."
Advances: Speaking, Conversing

Student Task Statement

What math questions can you ask about this image?

Student Response

Sample responses:

- How many people are there altogether?
- How many more students are there than teachers?
- How many fewer pattern blocks does this kid have than this kid?

Launch

- Groups of 2
- "Use numbers to describe the image."
- 1 minute: quiet think time
- 2 minutes: partner discussion
- Share responses.

Activity

- "Think about the math in this image. What math questions could be asked about this picture?"
- 3 minutes: independent work time
- 2 minutes: partner discussion
- Monitor for students who ask questions about how many altogether or how many more or fewer.

Activity Synthesis

- Invite several students to share one question with the class.
- Record responses.
- If needed, ask, "Can this question be answered by the image? How do you know?"
- "What do these questions have in common? How are they different?" (Some of them use the same numbers. Some ask to find the total and others ask to find the difference.)

Activity 2

15 mins

Different Types of Problems

Standards

Addressing **1.OA.A.1**

The purpose of this activity is for students to solve a variety of story problems that could be represented as an equation with an unknown addend. Students solve Put Together/Take Apart, Addend Unknown; Compare, Difference Unknown; and Add To, Change Unknown problems. Students may solve in any way they want and should be encouraged to explain how their representations and solution methods match the actions or quantities in each story (MP2). Listen for the ways students explain how their representations, including any expressions or equations they may use, represent the story.

Look for ways students' understanding of story problems and the types of representations they use have developed over the course of the unit. In particular, look for students who show they may be thinking flexibly about addition or

subtraction when solving problems that involve an unknown addend, including Add To, Change Unknown problems. This idea is explored in the *Lesson Synthesis*, although all students are not expected to use this strategy at this point in the course.

Access for Students with Disabilities

Action and Expression: Internalize Executive Functions. Invite students to plan a method, including the tools they will use, for representing and solving the story problems. If time allows, invite students to share their plan with a partner before they begin.
Supports accessibility for: Organization, Conceptual Processing

Required Materials

Materials To Gather

- Connecting cubes or two-color counters: Activity 2

Student Task Statement

1. Priya has 10 pattern blocks.
   7 are triangles.
   The rest are squares.
   How many pattern blocks are squares?
   Show your thinking using drawings, numbers, or words.

2. Elena has 4 pattern blocks.
   Tyler has 6 pattern blocks.
   How many fewer pattern blocks does Elena have than Tyler?
   Show your thinking using drawings, numbers, or words.

3. 3 students work at a table.
   Then some more students join.
   Now there are 8 students at the table.
   How many students join the group?
   Show your thinking using drawings, numbers, or words.

Student Response

1. 3 squares. Sample response: Student draws 7 triangles and counts on 3 squares until there are 10 shapes. Circles the 3 squares and labels the answer.
2. 2 pattern blocks. Sample response: Student draws a row of 4 shapes and a row of 6 shapes, matches the first 4 shapes in both rows, and then counts and labels the 2 unmatched shapes.
3. 5 students. Sample response: I counted on from 3 to 8. 3 ... 4, 5, 6, 7, 8. Five more join.

Launch

- Groups of 2
- Give students access to connecting cubes, two-color counters, or 2 types of pattern blocks.

Activity

- "You will solve problems about the setting from the *Warm-up*. The questions may be like some of the questions you asked. Show your thinking using drawings, numbers, or words. Be ready to share your thinking with your partner."
- As needed, read each problem to students before giving independent work time and time for partner discussion.
- 6 minutes: independent work time
- 4 minutes: partner discussion
- Monitor for students who use counting on or other addition strategies and others who count back or use other subtraction strategies for the first two problems.

Activity Synthesis

- Invite previously selected students to share for the first problem.
- Record student methods and annotate their thinking with equations, as needed.
- "How are these strategies the same? How are they different?" (They both show thinking about the total and one of the parts. They both show a way to find the other part. One strategy shows thinking about counting on. It's like finding an unknown addend. The other shows taking away. It's like thinking about subtraction.)
- Repeat with the second problem.
- "How are these story problems the same? How are they different?" (You can solve both of them by thinking about how much you need to count on or add. One is about a total and parts, the other is about comparing.)

Advancing Student Thinking

If students have not tried a new strategy or method during the unit (for example, they have only used connecting cubes to count on), consider asking:

- "How did you solve this problem?"

- "What is another way you could have solved the problem without ___?"

Activity 3

15 mins

Centers: Choice Time

The purpose of this activity is for students to choose from activities that offer practice adding and subtracting within 10. Students choose from previously introduced stages of these centers:

- Capture Squares
- Shake and Spill
- What's Behind My Back?

Required Materials

Materials To Gather

- Materials from previous centers: Activity 3

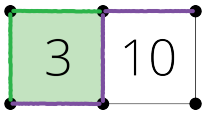
Required Preparation

- Gather materials from previous centers:
  - Capture Squares, Stage 1
  - Shake and Spill, Stages 3 and 4
  - What's Behind My Back, Stage 3

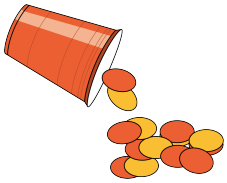
Student Task Statement

Choose a center.

Capture Squares



Shake and Spill



What's Behind My Back?

Launch

- Groups of 2
- "Now you are going to choose from centers we have already learned."
- Display the center choices in the student book.
- "Think about what you would like to do."
- 30 seconds: quiet think time

Activity

- Invite students to work at the center of their choice.
- 10 minutes: center work time

Activity Synthesis

- "What is one thing you learned or got better at by working on the activities you chose?"

Lesson Synthesis

Display and read this problem from the second activity:

3 students work at a table.
Then some more students join.
Now there are 8 students at the table.
How many students join the group?

"Tell your partner what happened in this story."

Monitor for students who emphasize the actions to share.

Display: $8 - 5 = \square$

"Does this equation match what happens in the story? Why or why not?" (No. The story is about some students joining, we just don't know how many. Addition would match the story better.)

Display: $3 + \square = 8$

"I heard some people say that addition would better match the story because some students joined, we just didn't know how many."

"Can we use $8 - 3$ to find what number would make this equation true? Why?" (We can because subtraction is like finding an unknown addend.)

"We've learned from solving different kinds of story problems that subtraction is like finding the value of an unknown

addend. If we have to find an unknown addend, we can subtract. If we need to subtract, we could think about how much to add to the smaller number."

"Even though $3 + \square = 8$ doesn't match the actions, we can still use it to solve the problem because we can use subtraction to find an unknown addend."

Observation

Lesson Observations for Unit 2, Section C

Standards

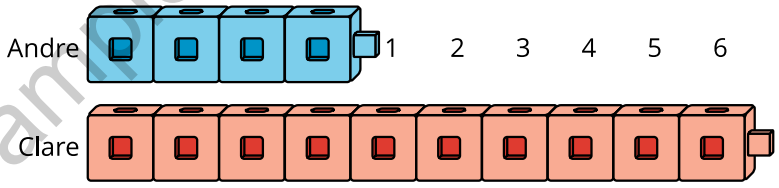
Addressing **1.OA.A.1**

Look Fors

- Answer the question correctly.
- Explain how their representation matches the story.
- Represent the story with objects or drawings.
- Retell the story.

Section C Summary

- We solved "are there enough?" problems. We decided which amounts were "more" or "fewer."
- We solved story problems about "how many more?" and "how many fewer?"
  Andre has 4 cubes.
  Clare has 10 cubes.
  How many fewer cubes does Andre have than Clare?
- We learned the difference between a bigger amount and a smaller amount is the answer to "how many more?" or "how many fewer?"



Andre has the smaller amount.
Clare has the bigger amount.
The difference is 6 cubes.

- We learned that these problems can be solved with addition or subtraction.

$4 + \boxed{6} = 10$ or $10 - 4 = \boxed{6}$

Center Day 3

Standards

Addressing **1.OA.C.6**

Instructional Routines

- Number Talk

Goals

- Explain (orally) strategies for adding and subtracting within 10.

Student Facing Learning Goals

Let's play games to practice adding and subtracting.

Lesson Purpose

The purpose of this lesson is for students to practice adding and subtracting within 10.

Narrative

First, students learn a new stage in the *Capture Squares* center. In this stage students subtract numbers within 10. Then students choose an activity to work on that focuses on addition and subtraction within 10.

Access For Students with Disabilities

- Representation

Access For English Learners

- MLR2

Required Materials

Materials To Gather

- Colored pencils or crayons: Activity 1
- Connecting cubes or two-color counters: Activity 1
- Number Cards 0–1: Activity 1
- Materials from previous centers: Activity 2

Materials To Copy

- Capture Squares Stage 2 Gameboard (1 copy for every 2 students): Activity 1

Lesson Timeline

Warm-up	10 mins
Activity 1	20 mins
Activity 2	20 mins
Synthesis Estimate	10 mins

Teacher Reflection Questions

Who did math today in class? How can you adjust norms, routines, or groups so all students do math during centers?

Warm-up

10 mins

Number Talk: Subtraction

Standards

Addressing **1.OA.C.6**

Instructional Routines

- Number Talk

The purpose of this *Number Talk* is to elicit strategies and understandings students have for subtracting within 10. These understandings help students develop fluency and will be helpful later in this lesson when students add and subtract numbers within 10.

Student Task Statement

Find the value of each expression mentally.

- $9 - 7$
- $9 - 2$
- $8 - 6$
- $8 - 2$

Student Response

- 2: I counted up from 7. 7...8, 9.
- 7: I counted back from 9, two numbers since it is minus 2. 9...8, 7.
- 2: I counted on from 6. 6...7, 8.
- 6: I know it is 6 because in the last problem it was $8 - 6 = 2$, and this one is the opposite.

Launch

- Display one expression.
- "Give me a signal when you have an answer and can explain how you got it."
- 1 minute: quiet think time

Activity

- Record answers and strategy.
- Keep expressions and work displayed.
- Repeat with each expression.

Activity Synthesis

- "How can the first equation help you with the second equation?" (If I know that 9 – 7 is 2, then I know that 9 – 2 is 7.)
- "How can the third equation help you with the fourth equation?" (If I know that 8 – 6 is 2, then I know that 8 – 2 is 6.)
- "Who can restate _____'s reasoning in a different way?"

Activity 1

20 mins

Introduce Capture Squares—Subtract within 10

Standards

Addressing **1.OA.C.6**

The purpose of this activity is for students to learn Stage 2 of the *Capture Squares* center. In this stage, students choose

two number cards and find the difference using math tools or mental math methods they have developed during the unit. Students connect two dots that are adjacent to the difference on the gameboard. If that line closes the square, they capture the square and shade it in with their color. If they can't draw a line, they choose two new cards. The player to shade in three squares first is the winner.

Access for English Language Learners

MLR2 Collect and Display. Circulate, listen for, and collect the language students use as they play the game. On a visible display, record words and phrases such as, “square,” “add,” “subtract,” “line,” and “dots.” Invite students to borrow language from the display as needed, and update it throughout the lesson.
Advances: Conversing, Speaking

Access for Students with Disabilities

Representation: Develop Language and Symbols. Synthesis: Invite students to explain their thinking orally, using connecting cubes, two-color counters, or drawings.
Supports accessibility for: Conceptual Processing, Language, Visual Spatial Processing

Required Materials

Materials To Gather

- Colored pencils or crayons: Activity 1
- Connecting cubes or two-color counters: Activity 1
- Number Cards 0–1: Activity 1

Materials To Copy

- Capture Squares Stage 2 Gameboard (1 copy for every 2 students): Activity 1

Launch

- Groups of 2
- Give each group a set of number cards, 2 different colored crayons or colored pencils, a gameboard, and access to connecting cubes or two-color counters.
- "We are going to learn a new way to play *Capture Squares*. Let's play a round together."
- Choose 2 number cards.
- "Today we are going to subtract the numbers instead of adding them. What is the difference between these numbers? How do you know?"
- 1 minute: quiet think time
- 30 seconds: partner discussion
- Share responses.
- "Now I find the square that shows the difference. I draw a line connecting two dots on that square."
- Repeat 1–2 more times, as needed.
- "If I can't draw a line, I choose two new cards. If I draw the line that completes the square, I shade in that square with my color. The first person to shade in three squares wins."

Activity

- 12 minutes: partner work time
- Monitor for students who show different ways they think about subtracting. Examples:
  - Use objects (including fingers) or drawings to take away from a total.
  - Use objects (including fingers) or drawings to count back.
  - Use objects (including fingers) to count on from the subtrahend (known part) to the minuend (total).

Activity Synthesis

- Invite 1–2 previously selected students to share how they found the value of their differences.
- Invite 1–2 students to share other strategies, including sharing sums they knew from memory.

Activity 2

20 mins

Centers: Choice Time

The purpose of this activity is for students to choose from activities that focus on addition and subtraction within 10. Students choose from previously introduced stages of these centers:

- Math Stories
- Shake and Spill
- What's Behind My Back?

Required Materials

Materials To Gather

- Materials from previous centers: Activity 2

Required Preparation

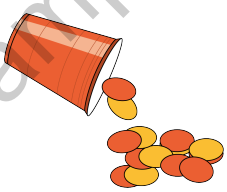
- Gather materials from previous centers:
  - Math Stories, Stage 4
  - Shake and Spill, Stage 3 and 4
  - What's Behind My Back, Stage 3

Student Task Statement

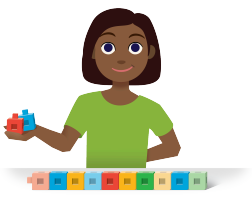
Choose a center.

Math Stories

Shake and Spill



What's Behind My Back?



Launch

- Groups of 2
- "Now you are going to choose from centers we have already learned."
- Display the center choices in the student book.
- "Think about what you would like to do first."
- 30 seconds: quiet think time

Activity

- Invite students to work at the center of their choice.
- 15 minutes: center work time

Activity Synthesis

- "What is one thing you learned or got better at by working on the activities you chose?"

Lesson Synthesis

"Today we chose activities to work on and worked with a partner during center time."

"How did you and your partner work together during centers? What went well? What can we continue to work on?"

Attributions

"5 Practices" refers to the 5 Practices for Orchestrating Mathematical Discussions from Smith, M. S., & Stein, M. K. (2011). *5 practices for orchestrating productive mathematics discussions.* Reston, VA: National Council of Teachers of Mathematics.

"Notice and Wonder" and "I Notice/I Wonder" are trademarks of the National Council of Teachers of Mathematics, reflecting approaches developed by the Math Forum (http://www.nctm.org/noticeandwonder/), and used here with permission.

Image Attributions

By pixychic. Pixabay. Pixabay. https://pixabay.com/photos/children-s-library-reading-children-1008229/.

By 200degrees. Pixabay. Pixabay. https://pixabay.com/vectors/book-rack-shelf-furniture-design-2943383/.

By klimkin. Pixabay. Pixabay. https://pixabay.com/photos/computer-monitor-lamp-library-901857/.

By Shengpan. Pixabay. Pixabay. https://pixabay.com/photos/library-read-modern-reading-room-684403/.

By Abdus Sattar Sazib. Pixabay. Pixabay. https://pixabay.com/images/download/oriental-garden-lizard-5352327_1920.jpg?attachment&modal.

Citations

Lesson Grade1.2.D20
Hispanic Heritage Month Games. (2016, September 18) *Spanish Playground*. Retrieved from https://www.spanishplayground.net/hispanic-heritage-month-games/

Lesson Grade1.2.D20
How to Play Lotería. (2019, May 20) *wikiHow.* Retrieved from https://www.wikihow.com/Play-Loteria

Lesson Grade1.2.D20
Lotería. *Wikipedia, The Free Encyclopedia*. Retrieved from https://en.wikipedia.org/wiki/Loter%C3%ADa