Illustrative Mathematics®

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GRADE 2

Unit

2

Teacher Adaptation Pack

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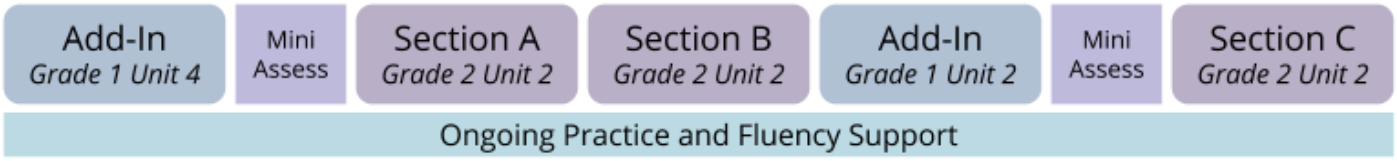
K5_Beta

Grade 2 Unit 2 Teacher Adaptation Pack

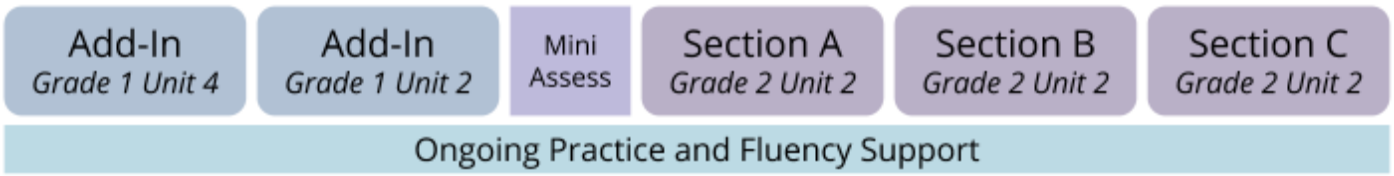
Directions for Use

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



Alternate Implementation



Grade 2 Unit 2: Add and Subtract within 100		
	Sections A and B	**Section C**
Standards	2.NBT.B.5, 2.NBT.B.6, 2.NBT.B.8, 2.NBT.B.9, 2.OA.A.1	2.NBT.B.5, 2.NBT.B.6, 2.OA.A.1
Prior-Grade Connections	1.NBT.B.2, 1.NBT.C.4, 1.NBT.C.5, 1.NBT.C.6	1.NBT.B.2, 1.NBT.C.4, 1.NBT.C.5, 1.NBT.C.6, 1.OA.A.1
Rationale	In Section A, students extend their place value understanding as they add and subtract within 100. Students work with expressions that do not require composing or decomposing a ten, so the emphasis is on adding or subtracting tens and tens and ones and ones. This work requires understanding tens and ones as units. In Section B, students work with subtraction expressions that require decomposing a ten. This builds on work of the previous section. In Section C, students solve story problems that involve addition and subtraction within 100. The story problems are all types—Add To, Take From, Put Together, Take Apart, and Compare, and have unknowns in all positions. All the types are familiar from grade 1.	
Add-in Lessons	Before Section A: • 1.4 Lesson 3 • 1.4 Lesson 5 • 1.4 Lesson 6 • 1.4 Lesson 8 • 1.4 Lesson 16	Before Section C: • 1.2 Lesson 17 • 1.2 Lesson 18 • 1.2 Lesson 19
2.2 Lessons to Combine or Skip	None	
Prior-grade Practice and Fluency	• Grade 1 Number Talks (addition within 100 and 20) • How Close? Close to 100 (included in 2.2 materials) • Center: Find the Pair (Stage 2)	

Extension and Exploration	• IM Task: Saving Money 1 • IM Task: Saving Money 2 • 1.8 Lessons 1 and 2 • 1.8 Lessons 23–27
Assessment	Mini-Assessment 1 Mini-Assessment 2

Table of Contents

1.4 Lesson 3: How Many Groups of 10?

Teacher-facing Learning Goals

- Understand that each multiple of 10 consists of _____ tens.
- Represent multiples of 10 with different representations.

Addressing CCSS: 1.NBT.B.2.C

Lesson Purpose

This lesson is optional and can be used if students need more practice with counting and representing groups of 10. The mathematical purpose of this lesson is for students to see multiple groups of ten make up a multiple of 10. Students learn that there are different ways to represent multiples of 10.

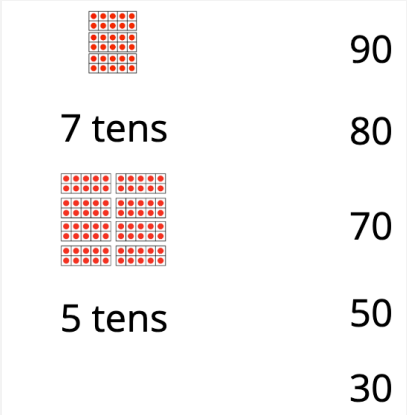
Materials Needed

Gather	**Copy**
• counters • paper clips • display images (warm-up, Activity 2, lesson synthesis)	• Create a set of cards for Card Sort for each group of 2 students (numbers/names/10-frames). • (optional) Copy of spinner for each group of 2 students

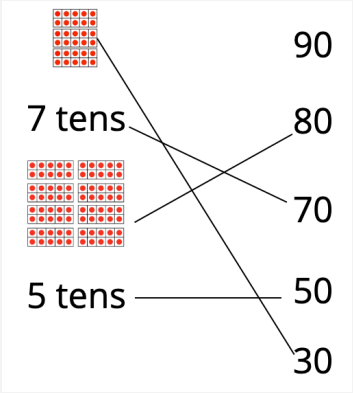
Cool-down: Attaching Base-Ten Representations to Numbers

Draw a line to the number that matches each base-ten representation.

There will be a number left over.



Student Responses



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

Lesson Narrative

In the previous lessons in this unit, students have been counting collections of multiples of 10 and organizing and representing their counts. They have discussed the idea that whether you count by ones or by tens, you will get to the same total.

The purpose of this lesson is to formalize the idea that each multiple of 10 is made up of a certain number of groups of 10 (for example, 40 is 4 groups of 10), and to make connections between different representations, including "_____ groups of 10" (5 tens or 5 groups of 10), the written number, the number in words, 10-frames, and drawings.

Access for Students with Disabilities	**Access for English Learners**
Activity 2: Engagement	Activity 2: MLR8 Discussion Supports

Student-facing Learning Goal: Let's find groups of ten.

Warm-up Narrative: How Many Do You See: Multiples of 10	**Addressing CCSS:** 1.NBT.A.1, 1.NBT.B.2.C

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.

In this activity, students have an opportunity to look for and make use of the base-ten structure (MP7)

as they explore multiples of 10.

Task Statement

How many do you see and how you do see them?

Image 1

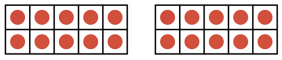


Image 2

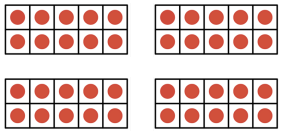
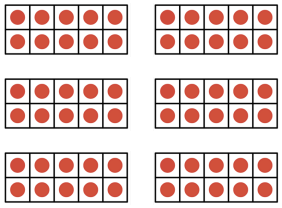


Image 3



Student Responses

1. 20. Sample response: 10 + 10 = 20.
2. 40. Sample response: I see four 10-frames filled up so I counted by tens: 10, 20, 30, 40.
3. 60. Sample response: Two more 10-frames were added, so 40, 50, 60.

Launch/Activity

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

Synthesis

- "How did you see the dots?"
- "Did anyone see the dots the same way but would explain it differently?"
- "How can knowing the number of groups of ten in each image help you know the answer?"
- "If you counted one counter at a time and someone else counted by tens, would you expect to get to the same total?"

Activity 1 Narrative: Matching Numbers: Groups of Ten and Written Numbers

Addressing CCSS: 1.NBT.B.2.C

The purpose of this activity is for students to connect numbers, images of 10-frames, and "____ groups of 10" to represent multiple of 10. At this point, students should be using skip counting by tens to find the total. Students may count on from a multiple of 10 they can subitize (I see 20, so 30, 40). Some students may be able to identify the number of tens (3 groups of ten) and just know that there are 30. Some students may still rely on counting by ones, and should be encouraged to think how the counting by groups of 10 can help them count more efficiently.

Task Statement

n/a

Launch/Activity

- Groups of 2

Student Responses
Students find all 9 sets of 3 matching cards.
	• "For this activity you and your partner are going to match 3 cards together so the sets are complete."
	• 10 minutes: partner work time
	• Monitor for students who:
	  ○ count by tens from a known multiple
	  ○ skip count by tens to determine the amount
	
	Synthesis
	• "Share your matches with another group. Do you agree on the same matches?"
	• Display the card with seven 10-frames.
	• "Someone thought that this card went with '7 groups of 10.' Do you agree? Why?" (Both show 7 groups of 10.)
	• 30 seconds: quiet think time
	• 1 minute: partner discussion
	• Record responses.
	• Display 2 matching cards that have a 10-frame and have _____ groups of 10.
	• "Looking at these two cards that we have already put together, what number matches it and how do you know?" (There are 6 groups of ten, skip count by 10 to get to 60, sixty begins with a 6.)
	• 30 seconds: quiet think time
	• 1 minute: partner discussion
	• Record responses.

Activity 2 Narrative: How Many Tens? Spin and Represent	**Addressing CCSS:** 1.NBT.B.2.C

The purpose of this activity is for students to show representations of multiples of 10 as numbers in a way that makes sense to them. Students have seen different representations of multiples of 10 and so they can choose how they would like to represent the numbers. Students spin a multiple of 10, and choose how to represent it on paper. Some students may draw 10-frames, filling in each box with a mark. Some students use short-cut methods, such as just drawing a rectangle to represent a ten. They may also use words such as "5 groups of ten" or " 5 tens" to represent the number they spun.

Each pair of students has a spinner, takes turns spinning, and each represents the number on their paper before comparing their ideas.

SwD Support Tags

- Engagement

MLR Tags

- MLR8 Discussion Supports

EL Support Text *MLR8 Discussion Supports*. Activity: During group work, 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

SwD Support Text *Engagement: Develop Effort and Persistence.*

Activity: Check in and provide each group with feedback that encourages collaboration and community. For example, check in after each partner has had their first turn in the game.

Supports accessibility for: Social-Emotional Functioning, Attention.

Task Statement

- Spin the paper clip.
- Represent your spin with a drawing, words, or numbers.
- Share representations.
- Add one your partner had that you didn't.

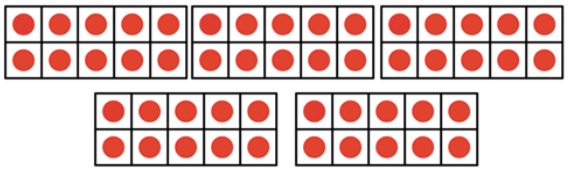
Launch/Activity

- Groups of 2
- Give students access to 10-frames and counters.
- "You and your partner are going to be taking turns spinning and representing numbers."

Spin: _____
My representations:

Student Responses
50. Sample responses:

- 

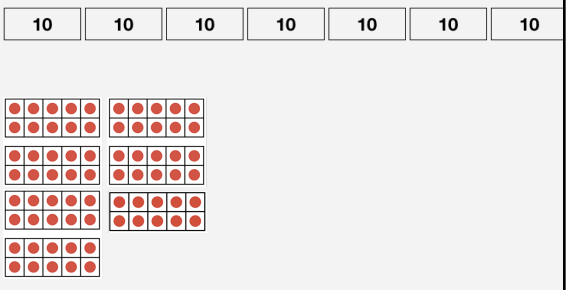
- 

- 5 groups of 10
- 5 tens
- 50

- Demonstrate spinning.
- "I spun (50). What number is that?"
- Share responses.
- "What are some ways that I can represent this number?" (10-frames, rectangles)
- 2 minutes: quiet think time
- Record responses.
- "What is another way that we can say it?" (5 tens, 5 groups of 10)
- 30 seconds: quiet think time
- 1 minute: partner share
- Record responses.
- 10 minutes: partner work time
- Monitor for students who:
  - draw a rectangle or circle and label each 10
  - use language such as "5 groups of 10" or "5 tens"

Synthesis

- "Let's look at some different representations for the number (70)."
- Display the image.

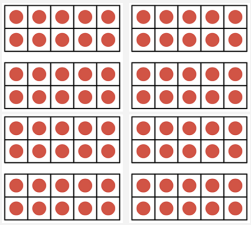


- "What do you notice about these representations?" (They both are rectangles. They both show a group of 10 in each rectangle. They both show 70. You can see

	the individual counters in the 10-frame representation.) • Share responses. • "As you represent your thinking with drawings, which representation would be more efficient to draw? Why?" (The rectangles since we don't have to draw each counter.) • 1 minute: partner discussion • Share responses.

Lesson Synthesis
"We've talked about how many groups of 10 we see in the numbers we've been working with."

Display the image (80 counters on 10-frames).



"How many dots are there?" (80)
"How did you find the answer?' (I counted by tens, I saw there were 8 tens.)
30 seconds: quiet think time
1 minute: partner discussion
Share responses.

"We can say that 80 is made up of 8 tens or 80 ones."

1.4 Lesson 5: Counting Tens and Ones

Teacher-facing Learning Goals
- Identify how many tens and how many ones are in a collection.
- Understand that the tens and ones places have specific values.

Addressing CCSS: 1.NBT.B.2

Lesson Purpose

The mathematical purpose of this lesson is for students to identify how many tens and ones there are in a quantity.

Materials Needed

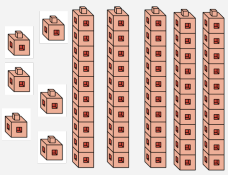
Gather

- bags of connecting cubes (not connected), 1 set of 6 bags for each group of 6 students.
  - Bag G: 24 objects
  - Bag H: 48 objects
  - Bag I: 64 objects
  - Bag J: 55 objects
  - Bag K: 79 objects
  - Bag L: 32 objects
- display image (Activity 2, lesson synthesis)

Copy

- copies of double 10-frame mat
- Create a set of cards for sorting with tens and ones, for each group of 2 students.

Cool-down: How Many Are There?



How many tens?
How many ones?

Student Responses
5 tens and 6 ones

Teacher Reflection Question
In previous units, the students explored the commutative property, recognizing that you can add numbers in any order and get the same sum. Is that concept something that students are connecting back to in this lesson? If not, are there specific questions you could try asking another time to highlight the connection?

Lesson Narrative

In previous lessons, students learned about two-digit numbers. For representations, students have used 10-frames, and the language of "_____ groups of 10."

The purpose of this lesson is for students to continue to identify the tens and ones in a number. Beginning in this lesson, students will be writing "_____ tens and _____ ones" as a representation.

In the first activity, students count collections up to 80. They use the structure of tens and ones to determine the amount of cubes in a bag. In Activity 2, students match cards that have images of numbers using tens and ones to cards that have "_____ tens and _____ ones." The number of bags for the counting collections can be lessened by arranging the bags in "stations" and having the students rotate around to each station to count.

During the lesson synthesis, students discuss how to represent the image in numbers and words when there are 0 tens and some number of ones.

Access for Students with Disabilities	**Access for English Learners**
Activity 2: Representation	Activity 2: MLR8 Discussion Supports

Student-facing Learning Goal: Let's figure out how many tens and ones are in a collection.

Warm-up Narrative: Choral Counting

Building Toward CCSS: 1.NBT.B.2

The purpose of this Choral Count is to invite students to practice counting by ones from 50–81 and notice patterns in the count. This will be helpful later in this lesson when students need to count up to 80 objects.

In this activity, students have an opportunity to look for and make use of structure (MP7) because the structure of the base-ten system provided repetition in the ones and tens place when counting. Students understand how to count when they notice the structure of the 0–9 digit in the ones place repeats as the decades change.

Task Statement

n/a

Student Responses

50	60	70	80
51	61	71	81
52	62	72	
53	63	73	
54	64	74	
55	65	75	
56	66	76	
57	67	77	
58	68	78	
59	69	79	

Launch/Activity

- Count by 1, starting at 50.
- Record as students count.
- Stop counting and recording at 81.
- "What patterns do you see?"
- 1–2 minutes: quiet think time
- Record responses.

Synthesis

- "What do you notice about the numbers as we counted?"
- "Does anyone want to add an observation as to why that pattern is happening here?"

Activity 1: Counting Collections: Tens and Some More	**Addressing CCSS:** 1.NBT.A.1, 1.NBT.B.2
The purpose of this activity is for students to apply their understanding that a collection can be decomposed into tens and ones from previous lessons to count a collection up to 80 objects. Students have access to 10-frames so they can use a familiar structure for grouping 10, but some students may connect the cubes into towers of 10. Each group of 4 shares the 6 bags although each individual student counts and represents their own bag.	

Task Statement

Pick a bag.
Count your collection.

Bag _____
How many are in the bag?
Show how you counted with drawings, numbers, or words.

Student Responses

- Bag G: 24 objects
- Bag H: 48 objects
- Bag I: 64 objects
- Bag J: 55 objects
- Bag K: 79 objects
- Bag L: 32 objects

Launch/Activity

- Groups of 4
- Give each group a set of bags and access to 10-frames.
- "Today you are going to count collections of objects. There will be 6 bags to choose from. You will count by yourself. After you count each bag, show how many you counted with drawings, numbers, or words. Try to do three bags today."
- 15 minutes: group work time
- Monitor for students who organize and count by groups using:
  - 10-frames
  - towers of 10

Synthesis

- "Let's see how two classmates organized and counted. Listen so that you can make connections to the way that you organized and counted."
- Select 2 students to share who used the groups of ten strategies from above.
- "What do you notice about these two repesentations?" (They both show groups of 10, but one uses 10-frames and one uses towers of 10.)
- 30 seconds: quiet think time
- Share responses.
- "This new representation, towers of 10,

	is another way to show tens and ones. Each tower of 10 represents a group of ten and each single cube represents ones."
Activity 2: Concentration: Quantities with Tens and Ones	**Addressing CCSS:** 1.NBT.B.2
The purpose of this activity is for students to match cards that show different kinds of representations of collections. Some cards will show representations that students just counted as 10-frames or as towers of 10, and other cards will represent the collections in numbers and words, for example: _____ tens and _____ ones. During lesson synthesis, the teacher displays matches for each of the different sets of cards. Students discuss that there is a direct connection between the number of tens and ones in the image and the number of tens and ones when the image is represented in numbers and words.	
SwD Support Tags • Representation	
MLR Tags • MLR8 Discussion Supports	
EL Support Text *MLR8 Discussion Supports*. Activity. Students should take turns finding a match and explaining their reasoning to their partner. Display the following sentence frames for all to see: "I noticed _____ , so I matched . . ." Encourage students to challenge each other when they disagree.	
SwD Support Text *Representation: Access for Perception.* Launch/Activity: Begin by showing a physical demonstration of one complete round of the matching game to support understanding of the context. *Supports accessibility for: Memory,Visual-Spatial Processing.*	
Task Statement	**Launch/Activity** • Groups of 2

Players take turns.

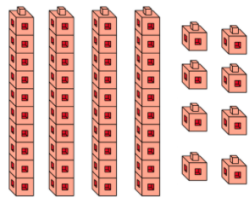
On your turn:

- Flip over 2 cards.
- If they match, keep them.
- If they don't match, turn them back over.
- Play until all the cards are matched.

What parts of the card did you look at to make sure they matched?

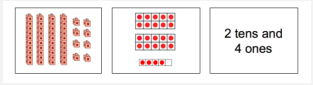
Student Responses

Sample response:



4 tens and 8 ones

- Display the image.

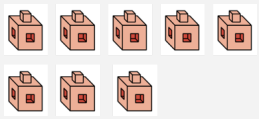


- "Today you will be playing a game in which you try to find matches for cards. For example, look at these 3 cards. Which 2 match?"
- 30 seconds: quiet think time
- 1 minute: share responses
- "To play this game, you put all the cards face down. One partner turns over 2 cards. If they match, they keep them. If they don't match, they turn them back over. Then the other partner turns over 2 cards. If they match, they keep them, and if they don't, they turn them back over. It is important to try and remember where different cards are. The goal is to get all the cards matched."
- 12 minutes: partner work time
- Monitor and select students who accurately match:
  - tens and ones accurately
  - 0 tens, some ones

Synthesis:

- "Let's look at some matches I saw during partner discussion."
- Display an accurate match of tens and ones from the cards.
- "Explain how you knew these cards matched." (I saw that there were 5 towers of 10 and 3 single cubes, so that's 5 tens 3 ones.)
- 30 seconds: quiet think time
- Record responses.
- Repeat as time allows.

Lesson Synthesis

Display the image or use cubes: 
"How is this image different than the ones we used in the activity today?" (There is not a 10.)
"How many tens does this card show?" (0)
30 seconds: quiet think time
Record responses.
"We say that numbers with one digit have 0 tens. What other numbers do you think have 0 tens? Why do you think that?"
30 seconds: quiet think time
Record responses.

1.4 Lesson 6: Expressions with Tens and Ones

Lesson Narrative

In a previous unit, students decomposed teen numbers into tens and ones. They wrote expressions to match these numbers. In previous lessons, students learned about the value of some number of tens and wrote the numbers to match them. Students identified how many tens and ones were in a base-ten drawing using 10-frames and towers of 10. They thought about how the value of each place is important.

The purpose of this lesson is for students to connect representations of tens and ones to expressions that show expanded form. To begin, students are invited to think about whether order matters when working with tens and ones. Students determine that the value of tens and ones is important. Students then link their ideas about value to writing expanded form expressions as a new representation. This reinforces the idea that each place has a value that can be written in numbers as part of an expanded form expression. Students connect these expressions to how numbers are written in later lessons.

In the lesson synthesis, students see a written representation of base-ten blocks. Although students will not be working very much with base-ten blocks in this unit, they will need to recognize representations of them.

Access for Students with Disabilities	Access for English Learners
Activity 2: Engagement	Activity 2: MLR8 Discussion Supports

Student-facing Learning Goal: Let's write expressions to match base-ten representations.

Warm-up: How Many Do You See: Towers of 10 and Ones	**Building Toward CCSS:** 1.NBT.C

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. Students see towers of 10 and ones.

Task Statement

Image 1

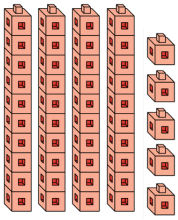


Image 2

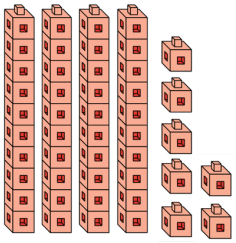
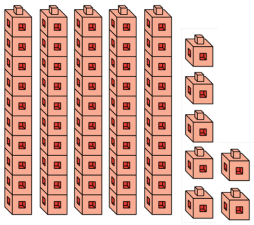


Image 3



Student Responses

Sample responses:

- 45. 4 tens is 40 and 5 more.
- 47. 4 tens and 5 is 45 plus two more is 46, 47.
- 57. 5 tens is 50 and the ones were the same.

Launch/Activity

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

Synthesis

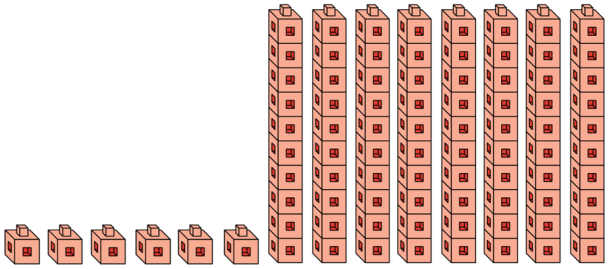
- "Who can restate the way _____ saw the image in different words?"
- "How does understanding how tens and ones work help you find the total?" (I can count how many tens I have and how many ones without counting every single cube.)

Activity 1: Who Do You Agree With?	**Addressing CCSS:** 1.NBT.B.2

The purpose of this activity is for students to think about the value of base-ten blocks and whether these values matter when representing a quantity. The students analyze two students' reasoning about a representation, and decide who they agree with, justifying their choice with drawings, words, or numbers. Students have access to connecting cubes in towers of 10 and singles and 10-frames and counters.

During the activity synthesis, the teacher emphasizes the value of the digits and connects to the commutative property.

Task Statement



Clare says that altogether, there are 6 tens and 8 ones.

Diego says there are 8 tens and 6 ones.

1. Do you agree with Clare or Diego? Explain using drawings, words, and numbers.
2. What number is represented?

Student Responses

Diego. Sample responses:

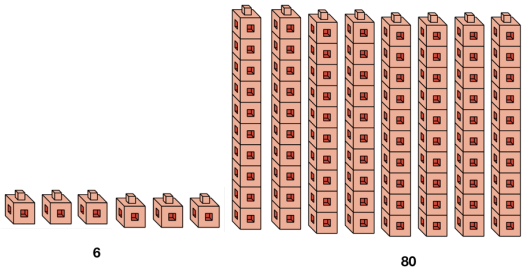
- 6 and 80 is not the same as 60 and 8.
- Clare didn't pay attention to which showed tens and which showed ones. The 6 means ones, and the 8 means tens. That's 80 and 6.

Launch/Activity

- Groups of 2
- Give students access to connecting cubes in towers of tens and ones.
- "Clare says that altogether, there are 6 tens and 8 ones. Diego says there are 8 tens and 6 ones. Who do you agree with? Explain your thinking using drawings, words, or numbers."
- 6 minutes: quiet work time
- 2 minutes: partner discussion

Synthesis

- "I heard someone say that the order that the base-ten drawings are in doesn't change the value of the number. What do they mean by that?" (There are still 8 tens and 6 ones no matter how you look at it.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.
- "If I wanted to represent this image as an expression I would write 6 + 80. How do these numbers relate to the image?" (There are 8 tens which is 80 and 6 ones which is 6.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.



Activity 2: Writing Expressions

Addressing CCSS: 1.NBT.B.2

The purpose of this activity is for students to write expressions to match base-ten drawings or _____ tens _____ ones notation. Most of these representations will be in the standard order, but several show the ones first so that students do not generalize that the tens always come first. Students who understand place value should be able to write the correct expression to match these representations even when the ones come first.

SwD Support Tags

- Engagement

MLR Tags

- MLR8 Discussion Supports

EL Support Text

Engagement: Provide Access by Recruiting Interest. Activity: Leverage choice around perceived challenge. Invite students to select at least 4 of the 6 problems to complete.

Supports accessibility for: Organization; Attention; Social-emotional skills

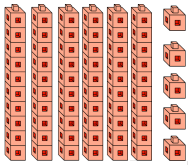
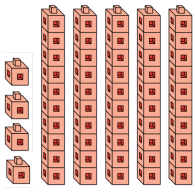
SwD Support Text

Engagement: Provide Access by Recruiting Interest. Activity: Leverage choice around perceived challenge. Invite students to select at least 4 of the 6 problems to complete.

Supports accessibility for: Organization; Attention; Social-emotional skills

Task Statement

Write the expression that matches each representation.

1.  expression: _____
2. 9 tens 4 ones expression: _____
3. 7 ones 2 tens expression: _____
4.  expression: _____
5.  expression: _____
6. 3 tens 5 ones expression: _____

Student Responses

1. 60 + 5
2. 90 + 4
3. 7 + 20 or 20 + 7
4. 0 + 3
5. 4 + 50 or 50 + 4
6. 30 + 5

Launch/Activity

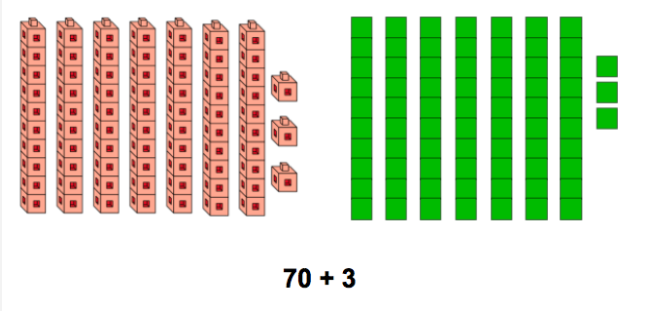
- Groups of 2.
- Give students access to connecting cubes in towers of 10 and ones.
- "Write the expression that matches each representation."
- 6 minutes: independent work time
- 3 minutes: partner discussion
- If students finish early, ask them to take turns using the cubes to build their own representation and have their partner say the number and write the expression to match.

Synthesis

- Display question 5.
- "Some students wrote 4 + 50 and some students wrote 50 + 4. What do you think about these two expressions?" (They are both the same, in a different order. They both equal 5 tens 4 ones.)
- 30 seconds: quiet think time
- Share responses.
- If needed: "Where in the picture do you see the 4 ones and where do you see the 5 tens?"
- 30 seconds: quiet think time
- Share responses.

Lesson Synthesis

Display the image:



"What do you notice about these representations?" (They both show groups of 10 but with 2 different

pictures.)
30 seconds: quiet think time
1 minute: partner discussion

Display the number 73.
"What do you notice about this number? How is it the same as the other representations? How is it different?" (It's how to write 7 tens 3 ones or the picture. I notice that when I write it I take the 0 and + away from 70 + 3. 73 must have 7 tens 3 ones.)

1.4 Lesson 8: Writing Numbers as Tens and Ones

Lesson Narrative

In previous lessons, students counted quantities and represented them with pictures, _____ tens _____ ones and expanded form. They wrote numbers to match these representations.

The purpose of this lesson is for students to represent numbers as base-ten drawings, _____ tens _____ ones and expanded form. Students move flexibly between these representations, even if ones are presented first. Students who just know that 45 is 4 tens 5 ones, have built an understanding about the structure of numbers. Students who are still counting by tens to build or draw the total, are still building an understanding of this structure.

During lesson synthesis, students learn about a more efficient way to draw base-ten blocks. Some students may already use this method. It is important to check in with these students to be sure that they understand that these drawings represent amounts of tens and ones. If a student is using this method to represent a number, share their thinking during lesson synthesis.

Access for Students with Disabilities	**Access for English Learners**
Activity 1: Action and Expression	Activity 1: MLR7 Compare and Connect

Student-facing Learning Goal: Let's represent a number using different base-ten representations.

Warm-up Narrative: What Do You Know About 75?	**Addressing CCSS:** 1.NBT.A.2

The purpose of this What Do You Know About is to invite students to share what they know and how they can represent the number 75. Although students may say many ideas, students are encouraged to think about how to represent the number using tens and ones.

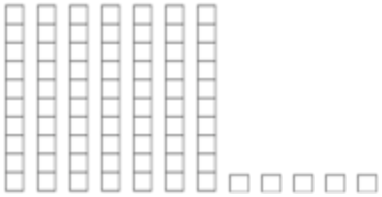
Task Statement

What do you know about 75?

Student Responses

Sample responses:

- It's one more than 74.
- It is 70 + 5.
- It's less than 100.
- It has 7 tens and 5 ones.
- We can represent it like this:



Launch/Activity

- Display the number.
- "What do you know about 75?"
- 1 minute: quiet think time
- Record responses.
- If students do not mention how they would represent the number 75, ask them: "How could we represent the number 75?"

Synthesis

- What connections do you see between different answers?

Activity 1 Narrative: Kiran Represents 85

Addressing CCSS: 1.NBT.A.2

The purpose of this activity is for students to analyze a common misconception about place value. They analyze a student's thinking who represents the number 65 incorrectly. Students may use connecting cube towers of 10 and singles but they need to represent their thinking using base-ten drawings, _____ tens _____ ones, or expanded form. They explain whether they agree or disagree, and use their representation as part of their justification.

SwD Support Tags

- Action and Expression

MLR Tags

- MLR7 Compare and Connect

EL Support Text

Compare and Connect. Synthesis: Lead a discussion comparing, contrasting, and connecting the different representations. Ask, "How are the representations the same?", "How are they different?", and "How do these different representations show the same information?"

Advances: Representing, Conversing

SwD Support Text

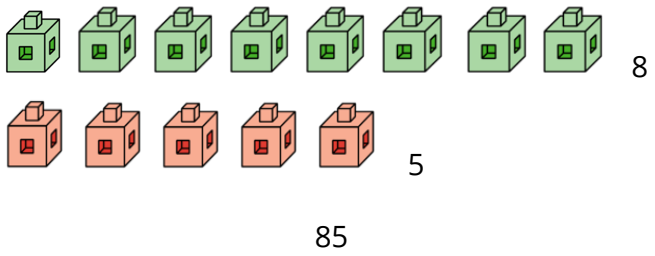
Action and Expression: Develop Expression and Communication. Synthesis: Identify connections between strategies that result in the same outcomes but use differing approaches. Identifies similarities and differences between representations such as towers of 10, base-ten drawings, tens and ones, and expanded form.

Supports accessibility for: Visual-Spatial Processing.

Task Statement

1. Kiran is representing the number 85.

He used connecting cubes to build.



Do you agree with his representation? Why or why not?
Explain your reasoning using drawings, words, or numbers.

2. Sketch what 85 would look like using the connecting cubes.

Student Responses

Sample responses:

1.

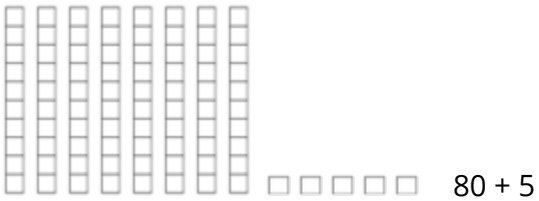
- Disagree. In 85 there are 8 tens and 5 ones. This representation shows 8 ones and 5 ones. Kiran actually only represented 13.
- Disagree. 85 is 80 + 5. I don't see 8 tens; I only see 8 ones. He would need to represent it like

Launch/Activity

- Groups of 2
- Give students access to connecting cubes in towers of 10.
- "Kiran is representing the number 85. He said, 'These 8 connecting cubes stand for the 8 in my number and these 5 connecting cubes stand for the 5 in my number. That's 85.' Do you agree with his representation? Why or why not? Explain your reasoning using drawings, words, or numbers."
- 5 minutes: independent work time
- 2 minutes: partner discussion
- Monitor for students who use the following to justify their thinking:
  - towers of 10
  - base-ten drawings
  - _____ tens _____ ones
  - expanded form

Synthesis

- "Many of you disagree with Kiran's statement. Let's look at a few representations and listen to why we disagree."
- Sequence student explanations:
  - towers of 10 or drawings
  - _____ tens _____ ones notation
  - expanded form



80 + 5

8 tens 5 ones

2. Students may use lines to represent the tens and small squares for the ones or draw the towers of ten with each square represented.

- "It is important to remember that when we see a number, each digit represents a specific value—tens or ones."

Activity 2 Narrative: Base-Ten Representations

Addressing CCSS: 1.NBT.B.2

The purpose of this activity is for students to be able to produce representations of two-digit numbers based on other representations. Students move between base-ten drawings, _____ tens _____ ones, expanded form, and numbers. Students are given a chart with each of these representations, in which some boxes are missing. They represent the other base-ten forms.

Some base-ten representations are shown with the ones first so students need to consider the meaning of the digits.

During synthesis, students think about where the tens and ones are shown in each representation for 81.

Task Statement

Fill in the missing parts on the table.

Number	Base-ten Drawing	___ tens ___ ones	Addition Expression Using 10s and 1s
34		3 tens 4 ones	30 + 4
			

Student Responses

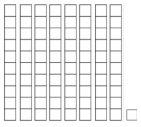
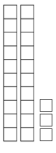
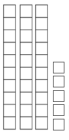
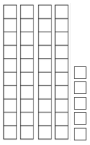
- 63, 6 tens 3 ones, 60 + 3

Launch/Activity

- Groups of 2
- Give students connecting cubes in towers of 10 and singles.
- Display the workbook page.
- "Fill in the missing parts in the table."
- 10 minutes: independent work time
- 3 minutes: partner discussion
- Monitor for students who use a shortcut to draw base-ten blocks, as this will be discussed during lesson synthesis.

Synthesis

- "For each of the representations of 81,

•  , 8 tens 1 one, 80 + 1 • 23,  , 20 + 3 • 37,  , 30 + 7 • 45,  , 4 tens 5 ones • 59, 5 tens 9 ones, 50 + 9	where are the tens and where are the ones?" • 30 seconds: quiet think time • 1 minute: partner discussion • Share responses.

Lesson Synthesis

Give students paper and pencil.

Display the image.

37

"This is a base-ten drawing of 37 I saw during class today. What do you notice about how the student drew it?" (There is just a long rectangle, there are not 10 small boxes to show the 10 ones in a ten.) Share responses.

"Now that we are counting larger quantities, this is a new type of base-ten drawing that we can use. It is a short-cut method that can make your base-ten drawings more efficient."

Suggested Center Activities: Center A: Stages 5 and 6, Center B, Center C

1.4 Lesson 16: Breaking Apart Two-Digit Numbers in Different Ways

Lesson Narrative

In the previous lesson students saw that a two-digit number can be decomposed in different ways using more than 9 ones.

The purpose of this lesson is for students to decompose two-digit numbers in multiple ways. In Activity 1, students decompose 54 in as many ways as they can using some of the patterns and observations from the previous lesson. In Activity 2, the students solve riddles about two-digit numbers by decomposing numbers into tens and ones. Students can choose whether to use base-ten blocks, connecting cubes, drawings, words, numbers, or expressions to represent their thinking.

Access for Students with Disabilities	**Access for English Learners**
Activity 2: Engagement	Activity 2: MLR8 Discussion Supports

Student-facing Learning Goal: Let's put together and break apart two-digit numbers in different ways.

Warm-up Narrative: Estimation Exploration: Tens and Ones

Addressing CCSS: 1.NBT.A.1
Building Toward CCSS:

The purpose of an Estimation Exploration is to practice the skill of estimating a reasonable answer based on experience and known information. It gives students a low-stakes opportunity to share a mathematical claim and the thinking behind it (MP3). Asking, "Does this make sense?", is a component of making sense of problems (MP1), and making an estimate or a range of reasonable answers with incomplete information is a part of modeling with mathematics (MP4).

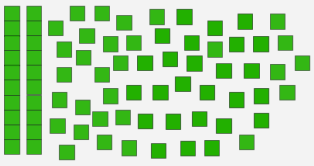
Task Statement

Round 1: Record an estimate that is:

too low	about right	too high

Round 2: Record an estimate that is:

Launch/Activity

- Groups of 2
- Display image 1: 
- "What is an estimate that's too high? Too low? About right?"
- 1 minute: quiet think time
- 1 minute: partner discussion
- Record responses.

too low	about right	too high

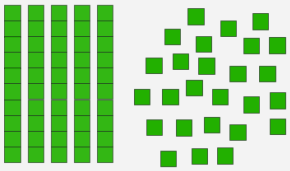
Student Responses:
Round 1: Sample responses:

- 20, 50, 100
- 30, 60, 100
- 40, 75, 100

Round 2: Sample responses:

- 50, 70, 80
- 50, 75, 90
- 60, 75, 100

- "Let's look at another image of the same collection."



- Display image 2:
- "Based on the second image, do you want to revise, or change, your estimates?"
- 1 minute: quiet think time
- 1 minute: partner discussion
- Record responses.
- "There are 76 ones."

Activity 1 Narrative: All the Ways to Make 54

Addressing CCSS: 1.NBT.B.2

The purpose of this activity is for students to decompose a number multiple ways. Students do not need to come up with every way, but they should be able to decompose in more than two ways. Students may choose to use connecting cubes as they work and then represent their decompositions with drawings, numbers, or expressions.

Task Statement
Break apart 54 into tens and ones in as many ways as you can.

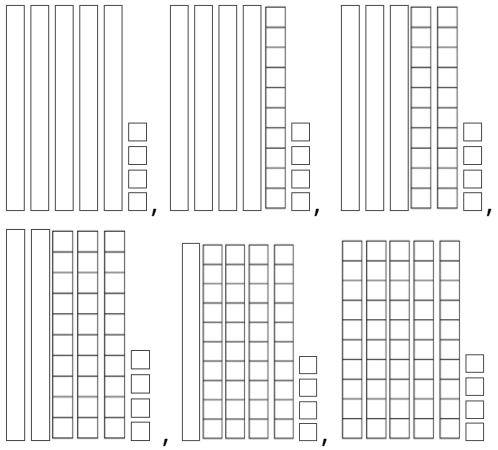
Show your thinking using drawings, numbers, or words.

Student Responses
Sample responses:

- 5 tens 4 ones, 4 tens 14 ones, 3 tens 24 ones, 2 tens 34 ones, 1 ten 44 ones, 0 tens 54 ones
- 50 + 4, 40 + 14, 30 + 24, 20 + 34, 10 + 44

Launch/Activity

- Groups of 2
- Give students access to connecting cubes in towers of 10 and singles.
- "Yesterday, we broke apart 35 in different ways, saw some patterns, and made connections between solutions. Today you are going to break apart the number 54 into tens and ones. The challenge is to find as many ways as you can on your own. You can use connecting cubes, drawings, numbers, and expressions. You'll record your thinking on your paper. Then you will compare your work with your partner."
- 7 minutes: independent work time
- 3 minutes: partner discussion
- Monitor for students who:

- 

  - use connecting cubes to physically break apart a ten at a time to move between decompositions
  - decompose with 3 tens and 24 ones

Synthesis

- Ask a group to share who decomposed with 3 tens and 24 ones.
- "How could I draw a representation and an expression of how this number was broken apart?" (I could draw 3 tens and 24 ones. I could write 30 + 24.)
- 30 seconds: quiet think time
- Share responses.
- "What other expressions can show how to break apart 54?" (50 + 4, 40 + 14, 10 + 44, 0 + 54)
- 30 seconds: quiet think time
- Share and record responses.
- "How do we know that we've found all the ways? (I can see a pattern and it goes 50, 40, 30, 20, 10, and 0.)
- 30 seconds: quiet think time
- Share responses.

Activity 2 Narrative: What Number Am I? Base-Ten Riddles

Addressing CCSS: 1.NBT.B.2

The purpose of this activity is for students to reason about tens and ones, to both compose and decompose two-digit numbers. Students are given base-ten riddles to solve.

In the first two problems the students are composing a two-digit number using clues, and in the last two problems, the students decompose a given number to determine the number of tens or ones. Students have the option to use connecting cubes as they are working.

SwD Support Tags

- Engagement

MLR Tags

- MLR8 Discussion Supports

EL Support Text

MLR8 Discussion Supports. Synthesis: Display sentence frames to support students' sharing of strategies: First, I _____ because . . .", "I noticed _____ so I . . . ." *Advances: Speaking, Representing*

SwD Support Text

Engagement: Develop Effort and Persistence. Activity: Differentiate the degree of difficulty or complexity. Some students may benefit from starting with a number they have used in previous activities, such as 35.

Supports accessibility for: Conceptual Processing.

Task Statement

Solve each riddle.

1. I have 15 ones and 2 tens. What number am I? Show your thinking using drawings, numbers, or words.

2. I have 3 tens and 5 ones. What number am I?

   I am the number 35. I have 25 ones. How many tens do I have?

3. I am the number 35. I have 2 tens. How many ones do I have?

Are you ready for more?
Create your own riddle to share with a classmate.

Student Responses

1. 35
2. 35

Launch/Activity

- Groups of 2
- Give students access to connecting cubes.
- "You are going to solve number riddles. You can use connecting cubes if they will help you."
- 5 minutes: independent work time
- 3 minutes: partner discussion
- Monitor for a student who uses concrete tools and one who uses an expression.

Synthesis

- "How are riddles 2, 3, and 4 alike?" (They all have 35 as the number.)
- 30 second: quiet think time
- Share responses.
- "Let's see 2 different strategies for

3. 1 ten 4. 15 ones	solving and look for connections between them." • Select 2 students to share—one who used concrete tools and one who used an expression. • "How are these representations alike and different?" • 30 second: quiet think time • 1 minute: partner discussion • Share responses. • "How can we use our work in Riddle 3 to solve Riddle 4?" • 30 seconds: quiet think time • 1 minute: partner discussion • Share responses.

Lesson Synthesis

Display 20 + 34 and 30 + 5.

"When we look at the two expressions, which one has a greater value? How do you know?"

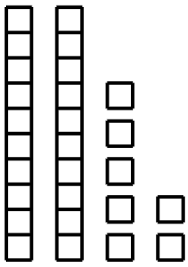
30 seconds: quiet think time

Share responses.

Record 20 + 34 > 30 + 5.

Mini-Assessment 1

1. How many?



Show your thinking using drawings, numbers, or words.

2. Circle the 2 expressions that have the same value as 53.

30 + 5	3 + 50
50 + 3	5 + 3
40 + 10 + 6	

3. Show **47** in three different ways.

Student Response:

1. 27
2. Circles 3 + 50, 50 + 3
3. Sample response:
   4 tens, 7 ones
   3 tens, 17 ones
   2 tens, 27 ones

1.2 Lesson 17: Sort Story Problems

Teacher-facing Learning Goals

- Solve Add To/Take From Change and Result Unknown, Put Together/Take Apart Unknown in all positions, and Compare, Difference Unknown story problems.
- Write an equation to match the story problem.

Student-facing Learning Goals

Let's solve story problems and write equations.

Lesson Purpose

The purpose of this lesson is for students to compare and solve story problems of different types they have seen throughout the unit.

Lesson Narrative

Students write an equation to represent a story problem, as they have been doing throughout the unit. When writing equations, students put a box around the answer to the question in the story problem. In this lesson, students begin by comparing different story problems to consider how the structures of the problems are the same or different. In Activity 2, students solve a variety of problem types in groups and write the equation that matches.

Access for Students with Disabilities	**Access for English Learners**
Activity 2: Engagement	Activity 1: MLR2 Collect & Display

Instructional Routines

Which One Doesn't Belong?

Materials to Gather	**Materials to Copy**
Activity 1: Activity 2: poster paper, markers, connecting cubes or counters	Activity 2: Story Problem Cards Blackline Master 1.2.D.17, one set for the class

Lesson Timeline	**Teacher Reflection Question**
Warm-up 10 minutes **Activity 1** 15 minutes **Activity 2** 15 minutes **Lesson Synthesis** 5 minutes **Suggested Centers** 15 minutes	How does writing equations help students make sense of the story problems?

Student-facing Task Statement
Lesson observations

Student Responses

- Retells the story.
- Represents the story with objects or drawings.
- Represents the story with equations.
- Explains how the representation matches the story.

Warm-up Title: Which One Doesn't Belong: Equations

Time: 10 minutes

Addressing CCSS: 1.OA.C.6, 1.OA.D.6

Materials to Gather

- none

Materials to Copy

- none

Instructional Routines

- Which One Doesn't Belong?

Warm-up Narrative

This warm-up prompts students to analyze and compare equations. In addition to calculating the value of each expression, students also think about the structure of each expression, including both the operations and the numbers.

Student-facing Task Statement

Which one doesn't belong?

A $6 + 4 = 10$	B $10 - 4 = 6$
C $2 + 2 + 2 = 6$	D $6 = 2 + 4$

Teacher Directions

Launch

- Groups of 2
- Display the image.
- "Pick one that doesn't belong. Be ready to share why it doesn't belong."
- 1 minute: quiet think time

Activity

	• "Discuss your thinking with your partner." • 2–3 minutes: partner discussion • Record responses. **Synthesis** • Display equations A and B. • "How are the equations the same? How are they different?" (They are related facts. A is addition and the sum is 10. B is subtraction and the difference is 6.)

Sample responses:

- A doesn't belong because it doesn't have a value of 6 on both sides of the equal sign.
- B doesn't belong because it doesn't use addition.
- C doesn't belong because the addition expression has 3 numbers.
- D doesn't belong because the sum is in front of the equal sign.

Activity 1 Title: Comparing Recess Stories

Time: 15 minutes

Addressing CCSS:

- 1.OA.A.1

Materials to Copy

- Story Problem Cards, one set for each group of 2

Activity Narrative

The purpose of this activity is for students to compare different story problems to determine how they are the same and different. The stories being compared represent problem types students have worked with in previous lessons, specifically:

- Add to, Change Unknown and Put Together, Addend Unknown
- Take From, Result Unknown and Put Together, Addend Unknown

As students discuss the similarities of the story problems, they may notice the structures of the problems are connected, that the way that you solve the problem uses the same operation, or that the answer is in the same place in the equation. These problems will be used again in the following activity.

During the synthesis, students discuss a Put Together, Both Addends Unknown problem and consider how the structure of the problem is different from the others.

MLR Tags
- MLR2

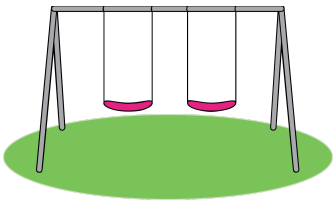
EL Support Text
MLR2 Collect and Display. Activity: Collect the language students use to talk about the problems. Display words and phrases such as: *sort, add, subtract, more, less, story, numbers*. During the synthesis, invite students to suggest ways to update the display: "What are some other words or phrases we should include?", and so on. Invite students to borrow language from the display as needed as they discuss the new problem.
Advances: Conversing, Speaking

SwD Support Text

Student-facing Task Statement

1.

a. There are 6 students on the swings.
Some more students come to play on the swings.
Now there are 9 students.
How many students came to the swings?



b. 9 students are reading by the fence.
7 students are reading picture books.
The rest are reading comic books.
How many students are reading comic books?

How are these problems alike?

Teacher Directions

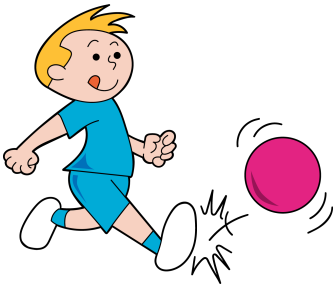
Launch
- Groups of 2
- "You and your partner are going to read 2 pairs of story problems. You are going to think about how the pairs of story problems are the same and different."
- Read problem 1a and 1b to the class.
- 1 minute: quiet think time

Activity
- "Tell your partner about how the 2 problems are the same and different."
- 4 minutes: partner discussion
- Share responses.
- Repeat with problems 2a and 2b.

Synthesis
- Share and record responses.
- Display and read Problem F.
  9 students can fit on the jungle gym.
  Some are hanging by their legs and some are hanging by their arms.
  Show how the 9 students could look on the jungle gym.

How are they different?
Be prepared to share your thinking.

2.

C. There are 9 students using the slide. 6 leave the slide to go inside. How many students are using the slide now? 	D. 9 students are playing kickball. 5 students are on the red team. The rest of the students are on the blue team. How many students are on the blue team? 

How are these problems alike?
How are they different?
Be prepared to share your thinking.

- "How is this problem the same as the others? How is it different?" (It still has 9 as the total. This time, you don't know either part.)

Student Responses

Sample responses:

1. They are alike because both problems have 9 students. You could count on to find the missing number for both. They are different because the students are all reading together, but on the swings, some more students come.
2. They are alike because they both start with 9 students. You can subtract to solve them both. On the slide, some students leave, but the students playing kickball are all there.

Activity 2 Title: Solve a Recess Story Problem

Time: 15 minutes

Addressing CCSS:

- 1.OA.A.1

Materials to Gather
- 9 sheets of poster paper
- markers

Materials to Copy
- Story Problem Cards Blackline Master 1.2.D.17, 1 set for the class

Activity Narrative
The purpose of this activity is for groups of students to solve a story problem and write an equation to represent it. Students are divided into 9 groups and each group gets one of the story problem cards from the blackline master. Students individually solve the story problem and write an equation to match it before creating a poster with their group. During the synthesis, students explain how the equations match the story problem. When students recognize that the numbers in the equations represent specific quantities in the story problems, they reason abstractly and quantitatively (MP2).

SwD Support Tags
- Engagement

SwD Support Text
Engagement: Internalize Self-Regulation. Activity: Provide students an opportunity to self-assess and reflect on their own progress. For example, ask students to check over their work to make sure they used pictures, words, or numbers to show their thinking, and also included at least one equation to show how they solved the problem.
Supports accessibility for: Organization; Conceptual Processing;

Student-facing Task Statement

Show your thinking with drawings, words, or numbers.
Write an equation to represent the story problem.

Teacher Directions

Launch
- Groups of 2–4, so there are 9 groups
- Give each group a poster, markers, and one of the story problems.

Activity
- "Read your problem with your partner. Then solve the problem on your own. Show your thinking with drawings, words, or numbers. Write an equation to represent the story problem."
- 4 minutes: independent work time
- "Work with your group to agree on the

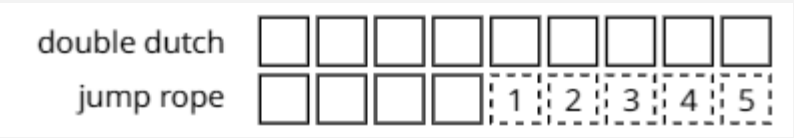
	answer to the story problem and make a display of your work. If you showed your thinking in different ways, include them all on the poster." • 6 minutes: partner work time • Monitor for 2–3 posters in which the representation is clear, labeled, and has accurate equations. **Synthesis** • Share selected posters. • "How does the equation each group wrote represent the story problem?"

Student Responses

Sample response:

- Problem A: 

7 + **2** = 9

- Problem G: 

4 + **5** = 9

Lesson Synthesis

Display and read problem G.

9 students are jumping Double Dutch.
4 students are jumping rope by themselves.
How many fewer students are jumping rope on their own than playing Double Dutch?
Write 9 - 4 = **5** and **5** + 4 = 9.

"How do each of these equations represent the problem?"

Suggested Centers
- Board Game, Stage 1
- What's Behind My Back, Stage 2
- Shake and Spill, Stage 4

1.2 Lesson 18: Introduce Equations with Unknowns

Addressing CCSS:
- 1.OA.A.1, 1.OA.D.8

Teacher-facing Learning Goals
- Solve a variety of story problem types.
- Interpret equations with a symbol for the unknown in relation to story problems.

Student-facing Learning Goals
- Let's make sense of equations with boxes.

Lesson Purpose
The purpose of this lesson is for students to interpret equations with a symbol for the unknown and connect them to story problems.

Lesson Narrative
In the previous lesson, students compared different types of story problems. They solved story problems and wrote an equation to represent the problem. In this lesson, students work with a symbol for the unknown in an equation for the first time. A box is used for the unknown to build on the previous work in the unit in which students put a box around the number in the equation that answered the question. In this lesson, students explain why their equation matches their work by relating it to the quantities and the unknown in the story problem.

Access for Students with Disabilities	**Access for English Learners**
Activity 1: Representation	Activity 1: MLR2 Collect and Display

Instructional Routines
- Notice and Wonder

Materials to Gather:	**Materials to Copy**
Activity 1: connecting cubes or counters Activity 2: connecting cubes or counters	Activity 1: • Story Problem Cards Blackline Master 1.2.D.17, one set per group of 2 students • Equation cards Blackline Master 1.2.D.18, one set per group of 2 students

Lesson Timeline **Warm-up** 10 minutes **Activity 1** 25 minutes **Activity 2** 15 minutes **Lesson Synthesis** 10 minutes **Cool-down** 5 minutes	**Teacher Reflection Question** Who participated in math class today? How can you leverage each of your student's ideas to support them in being seen and heard in tomorrow's math class?
Cool-down: Lin's Pencil Box	
Standards Alignment: • 1.OA.A.1	
Student-facing Task Statement Lin has 5 crayons in her pencil box. She also has some pencils. Altogether, she has 9 crayons and pencils. How many pencils does Lin have? Circle 2 equations that match the story problem. 9 - 5 = 4 9 - 5 = 14 5 + 4 = 9 5 - 9 = 4	
Student Responses 9 - 5 = 4 5 + 4 = 9	

Activity 1 Title: Notice and Wonder: Interpreting Equations with Unknowns
Time: 10 minutes
Addressing CCSS: • 1.OA.A.1, 1.OA.D.8

Materials to Gather
- none

Instructional Routines
- Notice and Wonder

Warm-up Narrative
The purpose of this warm-up is to introduce the equations with a symbol for the unknown value. While students may notice and wonder many things about this equation, how the equation relates to the story problem is the important discussion point. When students notice that the unknown value represents a specific quantity within the story problem, they reason abstractly and quantitatively (MP2).

Student-facing Task Statement
What do you notice? What do you wonder?

4 children are at the library.
Some teachers are at the library.
Altogether there are 10 children and teachers at the library.

4 + _6_ = 10

Teacher Directions

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.

Synthesis
- "How does the equation with the unknown value match the story problem?" (There are 4 children at the library and there are some teachers. We don't know how many teachers. There are 10 people altogether.)

Student Responses
Students may notice:
- There is a space instead of a number.
- The equation matches the story problem.
- I can find the answer by counting on.

Students may wonder:

- Is the number that goes on the line 6?
- Can I write a subtraction equation?

Activity 1 Title: Card Sort: Story Problems and Equations With a Symbol

Time: 25 minutes

Addressing CCSS:
- 1.OA.A.1

Materials to Gather
- none

Materials to Copy
- Story Problem Cards Blackline Master 1.2.D.17, one set per group of 2 students
- Equation Cards Blackline Master 1.2.D.18, one set per group of 2 students

Activity Narrative

The purpose of this activity is for students to match story problems to equations with a symbol for the unknown. Each equation is written to match the way the numbers are presented in the story problem. Problem G has more than one equation, which prompts students to discuss the relationship between addition and subtraction. During the synthesis, students discuss how an equation with a symbol for the unknown matches a Take From, Result Unknown story problem.

SwD Support Tags
- Representation

MLR Tags
- MLR2 Collect and Display

EL Support Text
MLR2 Collect and Display. Activity: Circulate, listen for, and collect the language students use as they match story problems to equations. On a visible display, record words and phrases related to solving Take From, Result Unknown story problems and matching them to equations with a symbol representing the unknown. Invite students to borrow language from the display as needed, and update it throughout the lesson. *Advances: Conversing, Reading*

SwD Support Text
Representation: Access for Perception. Activity: Provide appropriate reading accommodations and supports to ensure student access to story problems.
Supports accessibility for: Language; Memory;

Student-facing Task Statement	Teacher Directions
N/A	**Launch** ● Groups of 2 ● Give a set of story problems and equation cards to each group of 2. **Activity** ● "You have two sets of cards. One set of cards has the story problems we used in the last lesson. The other set of cards has equations with unknown values." ● "Work with your partner to match the story problems to the equations. One story has more than one equation. Be sure you can explain how you know they match." ● 12–15 minutes: partner work time **Synthesis** ● "Which equation matches Card C? How do you know?" 9 - 6 = 3 ● (9 represents how many students were sliding. 6 represents how many students leave so that is 9 - 6. The _____ represents how many are left, which is the answer to the problem.) ● Repeat for problems F and H. ● Display equation cards cards 6 and 8. ● "How does each of these equations match the story problem?" (There are 9 students jumping Double Dutch and 4 students jumping on their own. I need to find the difference, so I can subtract 9 - 4 to find the answer or I can say that 9 = 4 + 5 . 9 equals 4 plus some more students.)

Student Responses

A. 7 + 2 = 9 (card 1)

B. 6 + _3_ = 9 (card 2)
C. 9 - 6 = _3_ (card 4)
D. 4 + 5 = _9_ (card 5)
E. 9 = 5 + _4_ (card 10)
F. 9 = 7 + _2_ (card 3)
G. 9 - 4 = _5_ (card 6), 9 = 4 + _5_ (card 8)
H. 3 + _6_ = 9 (card 9)
I. 7 + _2_ = 9 (card 7)

Advancing Student Thinking

Students may not be able to match the story problems to the equation. Give students story problem card A and equation cards 1 and 7. Ask, "Which of these equation cards match the story problem? How do you know?"

Activity 2 Title: Which Equation?

Time: 15 minutes

Addressing CCSS:

- 1.OA.A.1, 1.OA.D.8

Materials to Gather

- connecting cubes or counters

Materials to Copy

- none

Instructional Routines

- none

Activity Narrative

The purpose of this activity is for students to interpret two different equations with a symbol for the unknown in relation to a story problem. Students are presented with a Put Together, Addend Unknown story problem and 2 equations that represent it, which allows students to further explore the relationship between addition and subtraction. Students explain how each equation represents the story problem and make connections between them. When students connect story problems to equations and explain these connections, they model with mathematics (MP4).

Student-facing Task Statement	**Teacher Directions**
9 students are out at recess. 3 students are wearing coats. The other children are wearing sweatshirts.	**Launch** • Groups of 2

How many children are wearing sweatshirts?

1. Clare wrote 3 + __6__ = 9
2. Jada wrote 9 - 3 = __6__

Explain how each equation matches the story problem.
Show your thinking using pictures, numbers, or words.

- Give students access to connecting cubes or counters.
- "We are going to look at one more story and two equations that can represent it."

Activity

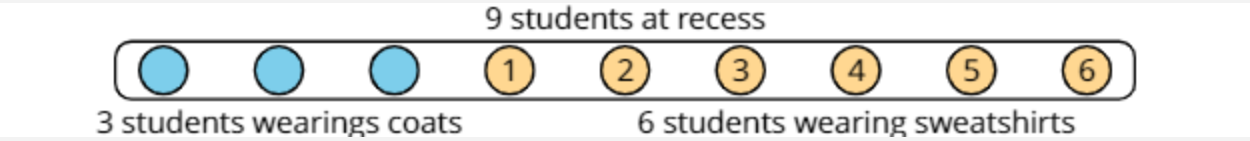
- Read the task statement.
- 5 minutes: individual work time
- 4 minutes: partner discussion

Synthesis

- "How do the equations relate to each other?" (The second equation can be used to find the missing number in the first equation. The number that goes in the box is the same.)

Student Responses

1. Sample response: 3 + __6__ = 9
2. Sample response: There are 9 students out at recess. I can subtract the 3 who have coats on to find out how many have sweatshirts on. 9 - 3 = __6__



Advancing Student Thinking

Prompt students to act out the story problem with connecting cubes or concrete drawings. Ask, "How does the problem relate to addition? How does it relate to subtraction?" Ask students to make the connections between the numbers in the problem to the equations.

Lesson Synthesis

"Today, we saw that for some story problems, there are addition and subtraction equations that can represent the problem. Which kind of equation do you prefer to write? Why?"
Response to Student Thinking

Students only circle the addition equation or subtraction equation.	**Next Day Support** • Give students connecting cubes to represent story problems.

1.2 Lesson 19: Story Problems and Equations	
Addressing CCSS: • 1.OA.A.1	
Teacher-facing Learning Goals • Solve a variety of story problem types. • Write more than 1 equation to match a story problem.	
Student-facing Learning Goals • Let's write more than 1 equation to match story problems.	
Lesson Purpose The purpose of this lesson is for students to write more than 1 equation to represent a story problem.	
Lesson Narrative Students are encouraged to write an equation with a symbol for the answer to the question, but they are not required to. Students may write a second equation using the relationship between addition and subtraction, the commutative property, or the meaning of the equal sign.	
Access for Students with Disabilities Activity 1: Engagement	**Access for English Learners** Activity 2: MLR6 Three Reads
Instructional Routines Which One Doesn't Belong?	
Materials to Gather Activity 1: connecting cubes or counters Activity 2: connecting cubes or counters	**Materials to Copy** • none

Lesson Timeline

Warm-up 10 minutes
Activity 1 15 minutes
Activity 2 15 minutes
Lesson Synthesis 5 minutes
Suggested Center Activities 15 minutes

Cool-down Title: Write Equations

Standards Alignment:

- 1.OA.A.1

Student-facing Task Statement

5 students are playing dodgeball.
8 students are playing football.
How many more students are playing football than dodgeball?

Write 2 equations to represent the story.

Student Responses

Sample responses:

- 5 + 3 = 8
- 5 + 3 = 8
- 8 - 5 = 3
- 8 - 3 = 5

Warm-up Title: Which One Doesn't Belong: More Equations

Time: 10 minutes

Addressing CCSS:

- 1.OA.A.1

Materials to Gather

- none

Materials to Copy

- none

Instructional Routines

- Notice and Wonder

Warm-up Narrative

The purpose of this warm-up is to elicit ideas about a questionless problem. There are possible different placements of an unknown symbol in an equation, which will be useful when students solve story problems and write equations with unknowns in a later activity. Students will also be exposed to different symbols to represent the unknown. 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 propose less formal or imprecise language, and then restate their observation with more precise language in order to communicate more clearly.

Student-facing Task Statement

Which one doesn't belong?

10 = ___ + 6	10 = _4_ + _6_
10 - 6 = _4_	6 + _4_ = 10

Teacher Directions

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.

Synthesis

- "How are these equations the same? How are they different?" (They each have an unknown number, they all use 4, 5, or 9, the unknown changes places, the unknown is either 5 or 9, the unknown is a different shaped symbol.)

Student Responses

Sample responses:

- A doesn't belong because it has an empty space.
- B doesn't belong because there are 2 answers.

- C doesn't belong because it's subtraction.
- D doesn't belong because the total is after the equal sign.

Activity 1 Title: Write More Than 1 Equation

Time: 15 minutes

Addressing CCSS:
- 1.OA.A.1

Materials to Gather
- connecting cubes or counters for each group of 2

Materials to Copy
- none

Activity Narrative
The purpose of this activity is for students to write more than 1 equation to represent a story problem. Students solve the story problem in any way they choose. Some students may write an equation in which the total is before the equal sign or that uses the add in any order property. Students may write equations in which the answer is boxed, equations that have a symbol for the unknown, or a combination of both.

SwD Support Tags
- Engagement

SwD Support Text
Engagement: Internalize Self-Regulation. Synthesis: Provide students an opportunity to self-assess and reflect on their own progress. For example, ask students to check over their work to make sure they used pictures, words, or numbers to solve the story problem, and also included an equation with a symbol for the unknown.

Student-facing Task Statement

1. 10 students are drawing with chalk.
   7 students are drawing with colored chalk.
   Some students are drawing with white chalk.
   How many students are using white chalk?

Solve the problem using pictures, words, or numbers.

Teacher Directions

Launch
- Groups of 2
- Give students access to connecting cubes and counters.
- "What are your favorite activities to do at recess?"
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.

Write 2 equations that represent the story problem.

2. There are 10 students on the swings.
   3 students leave to play soccer.
   How many students are still swinging?

   Solve the problem using pictures, words, or numbers.

   Write 2 equations that represent the story problem.

3. 10 students are on the playground.
   Some of the students are using the swings.
   Some of the students are using the slide.
   What are some ways to show who is swinging and who is sliding?

   Solve the problem using pictures, words, or numbers.

   Write 2 equations that represent the story problem.

4. Jada read 3 books.
   Her brother read 10 books.
   How many more fewer books did Jada read than her brother?

   Solve the problem using pictures, words, or numbers.

   Write 2 equations that represent the story problem.

Activity

- Read task statement.
- 6 minutes: independent work time
- "Share your equations with your partner."
- 3 minutes: partner discussion
- Monitor for groups that write addition and subtraction equations with and without unknowns for problem 4.

Synthesis

- Have selected students share their equations.
- "How does each equation represent the story problem?"

Student Responses

Sample responses:

1. 7 + _3_ = 10, 10 - 7 = _3_
2. 10 - 3 = _7_, 3 + _7_ = 10

3. 10 = 3 + 7, 10 = 7 + 3
4. 3 + 7 = 10, 10 - 3 = 7

Advancing Student Thinking

Students may easily find 2 equations that include all the values. Prompt these students to rewrite each as an equation with an unknown. Ask students, "How is the equation with the unknown the same as the equation with a box around the answer? How is it different?"

Activity 2 Title: Questionless Word Problems

Time: 15 minutes

Materials to Gather

- connecting cubes or counters for each group of 2

Activity Narrative

The purpose of this activity is for students to make sense of story problems without an explicit question present. In some story problems, like Add To, Change Unknown problems, students can infer what the problem in the story is without it being asked. In problem types like Compare, there are multiple questions that can be answered, all of which have different equations, solutions, and methods of solving. In presenting students with problems without questions, they strengthen their understanding of connections between story problems and the equations that match.

MLR Tags

- MLR6

EL Support Text

Reading: MLR6 Three Reads. Activity: Keep books or devices closed. Display the problem. "We are going to read this problem 3 times." After the 1st Read: "Tell your partner what this situation is about." After the 2nd Read: "List the quantities. What can be counted or measured?" After the 3rd Read: "How could we solve this problem? What question could we ask? What strategies can we use to solve this problem?" *Advances: Reading, Representing*

Student-facing Task Statement

1. Clare has 3 hula hoops.
   She gets some more.
   Now she has 9 hula hoops.

Teacher Directions

Launch

- Give students access to connecting cubes or counters.

Activity

- Read task statement.

What is a question you can ask about the story problem?

_____

_____

_____

Show your thinking with pictures, words, or numbers.

Which equation matches how you solved the story problem?

3 + _6_ = 9
9 - 3 = _6_

2. Diego has 2 beanbags.
   Noah has 9 beanbags.

- 5 minutes: independent work time
- "Share your question and equation with your partner."
- 3 minutes: partner discussion
- Monitor for students who wrote different questions for problem 2.

Synthesis

- Have selected students share.
- Display the equations:
  - 2 + 9 = _11_
  - 9 - 2 = _7_
  - 2 + _7_ = 9
- "Which question does each of these equations represent? How do you know?"

What is a question you can ask about the story problem?

_____

_____

_____

Show your thinking with pictures, words, or numbers.

Which equation matches how you solved the story problem?

2 + _7_ = 9
9 - 2 = _7_

Student Responses

1. Sample response: How many hula hoops does Clare get? 3 + _6_ = 9

2. Sample response: How many more beanbags does Noah have? 9 - 2 = 7

Lesson Synthesis

Write 3 + 7 and 3 = 10 and + 3 + ___ = 10
"How is the first equation the same as the second equation? How is it different?" (They are the same equation. There is only one answer that goes on the line, and that's 7. The first equation shows the answer, and in the second equation, you have to find the answer.)

Suggested Centers

- Board Game, Stage 1
- What's Behind My Back, Stage 2
- Shake and Spill, Stage 4

Mini-Assessment 2

1. Priya read 9 books and Tyler read 5 books. How many more books did Priya read than Tyler?

   Show your thinking with drawings, words, or numbers.

   Write an equation that shows your thinking. _____

2. Lin has some apples. She picks 3 more apples and now she has 10. How many apples did Lin have in the beginning?

   Show your thinking with drawings, words, or numbers.

   Write an equation that shows your thinking. _____

3. 9 students are out at recess. 3 students are jumping rope. The rest of the students are on the swings. How many students are on the swings?

   Show your thinking with drawings, words, or numbers.

   Write an equation that shows your thinking. _____

Student Responses:

1. 4. Sample response: 9 - 5 = 4
2. 7. Sample response: 3 + 7 = 10
3. 6. Sample response: 9 - 3 = 6

Prior Grade Practice and Fluency Resources

Grade 1 Number Talks

Find the value of each sum mentally. 4 + 4 5 + 4 6 + 6 6 + 7	Find the value of each sum mentally. 8 + 8 8 + 9 9 + 8 8 + 7
Find the value of each sum or difference mentally. 4 + 4 8 – 4 6 + 6 12 - 6	Find the value of each difference mentally. 12 - 2 12 – 3 12 – 9 12 - 8
Find the value of each sum or difference mentally. 10 + 5 10 + 8 10 + 3 14 – 4	Find the value of each sum or difference mentally. 10 + 4 10 + 6 15 – 5 13 – 3
Find the value of each sum mentally. 10 + 3 9 + 3 10 + 5 9 + 5	Find the value of each sum mentally. 10 + 4 9 + 4 9 + 6 15 – 6
Find the value of each sum mentally. 4 + 3 14 + 3 24 + 3 23 + 4	Find the value of each sum mentally. 7 + 3 17 + 3 27 + 3 23 + 7
Find the value of each sum mentally. 6 + 4 16 + 4 26 + 4 26 + 5	Find the value of each sum mentally. 15 + 10 25 + 10 28 + 10 36 + 10
Find the value of each sum or difference mentally. 35 + 10 52 + 10	Find the value of each difference mentally. 46 + 10 43 – 10

52 – 10 83 – 10	65 – 10 78 – 10

Center: Find the Pair 2

Center Narrative
Each partner has 5 cards in their hand. Partner A asks Partner B for a card that will make the target number when added to a number in their hand. If Partner B has the card, they give it to Partner A. If they do not have the card, Partner A picks from the pile. The first player to get rid of all their cards wins.

Stage 2: Make 10

Addressing CCSS:
- 1.OA.C.6

Materials to Gather:	**Materials to Copy:**
• 10-frames • connecting cubes	• Find The Pair. Make 10_2 Center • Number Cards (0–10)

Stage Narrative:
Students ask their partner for a number that would make 10 when added to the number on one of their cards. When students make the target number 10, they put down those 2 cards and write an equation to represent the combination.

Center: Matching Diagrams to Compare Problems 3

Teacher-facing Learning Goals
- Match diagrams to compare problems.

Look Fors
- Students interpret diagrams representing compare problems.
- Students write equations to match stories and diagrams.
- Students can use addition or subtraction to solve problems.

Student-facing Learning Goal: Let's look at representations and write story problems that match.

Materials Needed

Gather	**Copy**

• none	• Create a set of cards from 1.6 Center E BLM for each pair of students. • recording sheet for each student
Student-facing Directions and Task	**Teacher Directions**
Task statement • Find a story problem and an equation that match. • Tell your partner how you know they match. • Write an equation.	**Center Directions** • Groups of 2 • Give each group a set of cards. • Spread out all the cards. • Find a story problem and diagram that match. • Explain to your partner how you know the cards match. • Write an equation that can be used to solve the problem. **Questions to ask during center** • How did you know which diagram matched the problem? • Could you use addition/subtraction to solve this problem? • Where do you see Han's pencils in the diagram? • What does this part of the diagram represent?

Extension and Exploration Resources

IM Task: Saving Money 1

Materials

- popsicle sticks and rubber bands or base-ten blocks
- paper and pencil for each student

Directions: The teacher should pose the following question to students:

Louis wants to give $15 to help kids who need school supplies. He also wants to buy a pair of shoes for $39. If Louis gets $1 every day for his allowance, how many days will it take him to save enough money for both? Explain how you know.

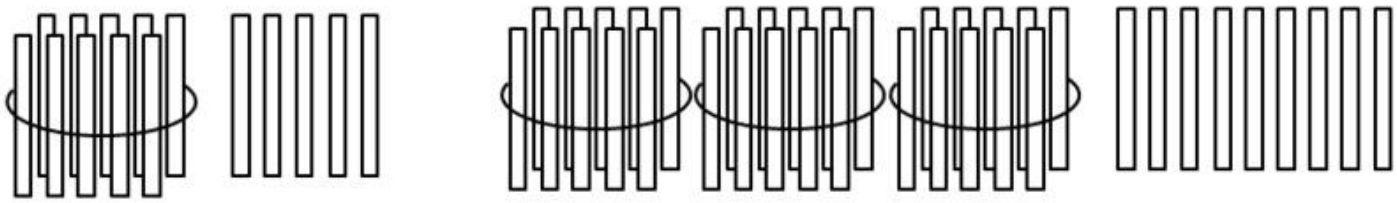
Purpose:

The purpose of this task is for students to relate addition and subtraction problems to money and to situations and goals related to saving money. This task has students adding two 2-digit numbers that require regrouping, and the solution shows a more concrete approach than the solution approach shown in 2.OA.NBT Saving Money 2. This problem can be adjusted based on where students are in their understanding of addition involving two-digit numbers.

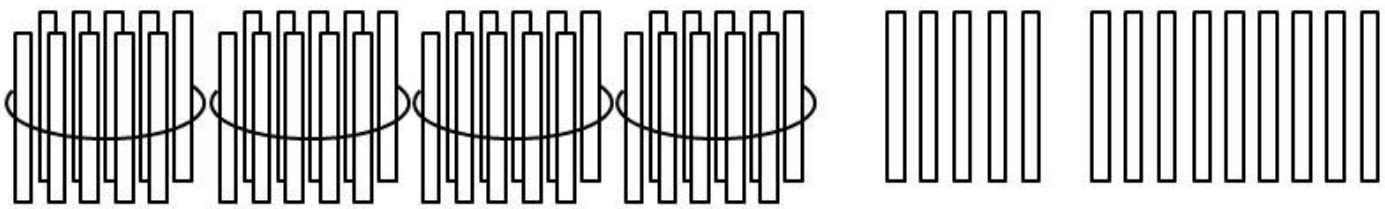
Teachers can make the problem more personal by letting the student choose a toy they want and the toy their sibling or friend may want and researching the costs. If students do this type of research, they will be engaging in MP4, Model with Mathematics. Students can also choose how much money they want to donate and for what cause. If the students in the class don't receive allowance, the child in the task can make money by helping a neighbor (perhaps walking a dog or bringing in the mail).

Solution: Using bundled objects

To find out how much money he needs to save, we will find 15 + 39. First, let's represent 15 with 1 bundle of ten and 5 single sticks and 39 with 3 bundles of ten and 9 single sticks:

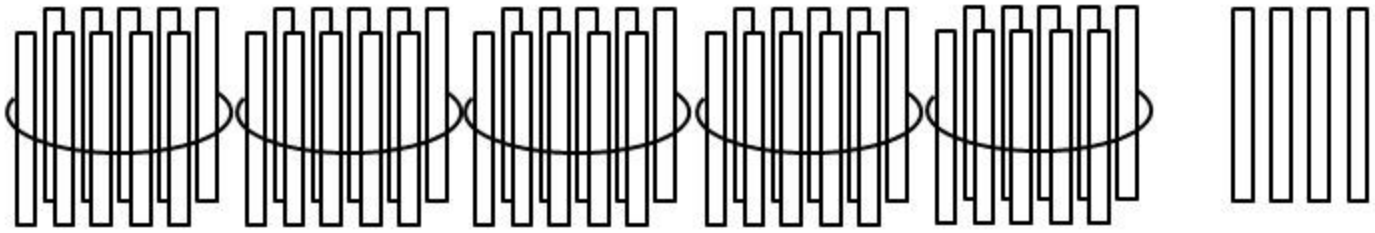


If we put the tens together and the ones together, we have 4 bundles of ten, and 5 singles and another 9 singles:



If we take 5 singles from the 9 and put them with the other 5:

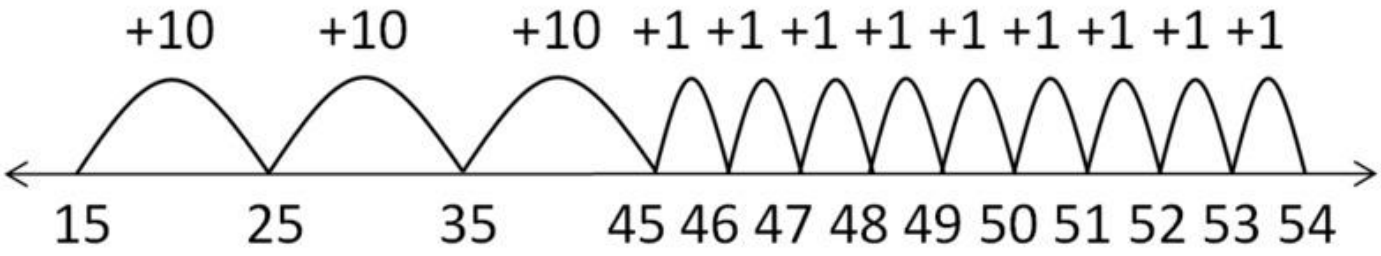
we can make another bundle of ten:



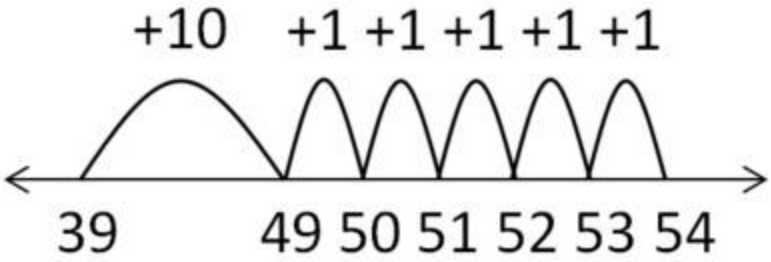
(Students might also take 1 from the five and put it with the 9 to make 10.)
Now we have 5 bundles of ten and 4 singles, which represents 54. Since he gets $1 per day, it will take him 54 days to save for both.

Solution: Using an empty number line

To find out how much money he needs to save, we will find 15 + 39.
We can start at 15, then count up by tens 3 times, then count up by ones 9 times:



It is actually more efficient to start with 39 and add 15 to it; some students will recognize this:

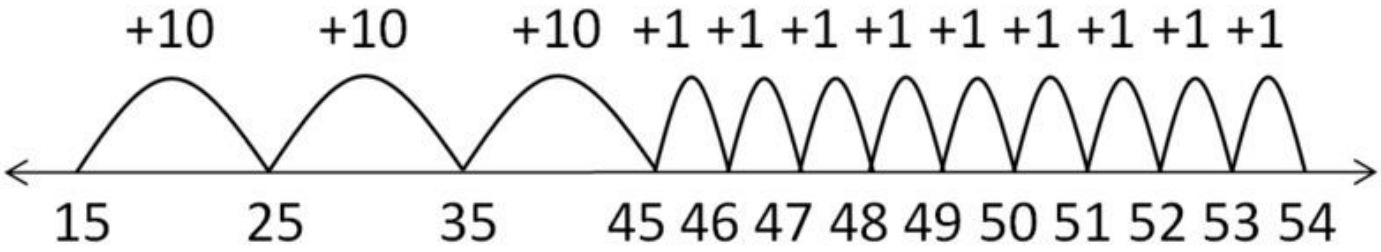


Since he gets $1 per day, it will take him 54 days to save for both.

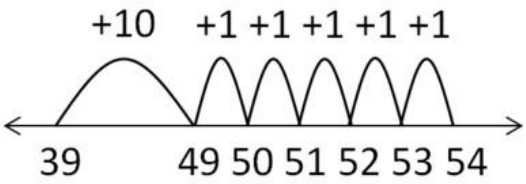
Solution: Using an empty number line

To find out how much money he needs to save, we will find 15 + 39.

We can start at 15, then count up by tens 3 times, then count up by ones 9 times:



It is actually more efficient to start with 39 and add 15 to it; some students will recognize this:



Since he gets $1 per day, it will take him 54 days to save for both.

IM Task: Saving Money 2

Task:
Louis wants to give $15 to help kids who need school supplies. He also wants to buy a pair of shoes for $39.

a. How much money will he have to save for both?
b. Louis gets $5 a week for his allowance. He plans to save his allowance every week. How many weeks does it take him to reach this goal?
c. Louis remembers his sister's birthday is next month. He sets a goal of saving $16 for her gift. How many weeks does he have to save his allowance to reach this goal? How many weeks does he have to save his allowance for all three of his goals?

Purpose: The purpose of this task is for students to relate addition and subtraction problems to money and to situations and goals related to saving money. This problem shows the work advanced second graders might use for adding 2-digit numbers. To see a task appropriate for students who are just beginning this work, see 2.NBT Saving Money 1. In second grade students should get to the point where they can add 2-digit numbers fluently (see 2.NBT.B.5); the solution below reflects how students who have made that transition might approach it.

Second-graders learn to skip-count by 5s, 10s, and 100s (see 2.NBT.2) and work with equal groups of 2s and 5s (see 2.OA.C), both to support their understanding of place value and in preparation for formal work with multiplication in third grade. This task is an instructional task that brings many aspects of the mathematical work that second-graders will be doing together with an opportunity to learn about financial literacy concepts.

Teachers can make the problem more personal by letting the student choose a toy they want and the toy their sibling or friend may want and researching the costs. If students do this type of research, they

will be engaging in MP4, Model with mathematics. Students can also choose how much money they want to donate and for what cause. If the students in the class don't receive allowance, the child in the task can make money by helping a neighbor (perhaps walking a dog or bringing in the mail).

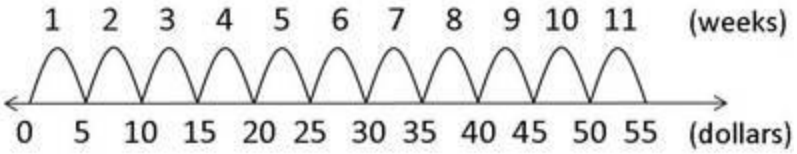
This particular task supports the demonstration of Mathematical Practice Standard 1, Make sense of problems and persevere in solving them. Problem solving is based on students engaging in a task in which a solution pathway is not known in advance. As second-graders approach this problem, they may draw on skip counting and their work with equal groups of 5 to help them determine a solution method. They may also decide to use a number line or create a table to record the savings by week. Since there are multiple solution methods, this allows students to think about this problem from different perspectives and choose a pathway that makes sense to them. Students may also need to search for a similar problem they have solved previously to give them a starting point. These types of experiences support a productive disposition towards problem solving as they provide students with multiple entry points and opportunities to build on what they already know.

Solutions:

Solution: Using an empty number line

a. Louis needs to save 15 + 39 dollars:
   15 + 39
   10 + 5 + 30 + 9
   10 + 30 + 5 + 9
   40 + 10 + 4
   54
   So Louis needs to save $54.

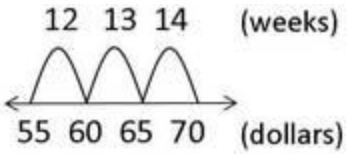
b. If we count up by fives, we can see how long it will take:



   So it will take Louis 11 weeks to save enough money for both.

c. If we look at the number line above, we can see it will take Louis 4 weeks to save enough for his sister's birthday present.
   To save enough for all three, Louis needs to save 54 + 16 dollars:
   54 + 16
   50 + 4 + 10 + 6
   60 + 10
   70

So Louis needs to save $70 for all three things. If we continue to count by fives:



we can see that it will take him 14 weeks altogether. The reason it took one less week than if we had added up the number of weeks we found above is that the extra money earned in the 4th week above and beyond what he needed for his sister's present combined with the extra money saved in the 11th week equals one week's allowance.

Solution: Recording the savings in a table

Louis needs to save 15 + 39 dollars:
15 + 39
10 + 5 + 30 + 9
10 + 30 + 5 + 9
40 + 10 + 4
54

So Louis needs to save $54.
If we count up by fives, we can see how long it will take:

week	amount saved
1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50

11	55

So it will take Louis 11 weeks to save enough money for both.
If we look in the table above, we can see it will take Louis 4 weeks to save enough for his sister's birthday present.
Louis needs to save 54 + 16 dollars:
54 + 16
50 + 4 + 10 + 6
60 + 10
70

So Louis needs to save $70 for all three things. If we extend the table above, we can see how long it will take.

12	60
13	65
14	70

The reason it took one less week than if we had added up the number of weeks is that the extra money earned in the 4th week above and beyond what he needed for his sister's present combined with the extra money saved in the 11th week equals one week's allowance.

1.8 Lesson 1: Counting Large Collections

Teacher-facing Learning Goals

- Organize, count, and represent a collection of objects up to 120.

Addressing CCSS: 1.NB.A.1, 1.NBT.B.2

Lesson Purpose

The mathematical purpose of this lesson is for students to count and represent a collection of objects of up to 120 using place value understanding.

Materials Needed

Gather

- display image (activity 1)
- bag of 90–120 items for each student
- 10-frames
- cups and plates

Look Fors

As students count, they:

- count the number of tens and ones, then say the number (9 tens 4 ones is 94)
- count by tens, then ones (10, 20, 30, 40, 50, 60, 70, 80, 90, 91, 92, 93, 94)
- count by ones

As students represent their count, they:

- draw
  - labeled base-ten representations in which all units are seen
  - 10-frame representations
  - individual objects
- use tens and ones language
- write expanded form
- write the number accurately

Teacher Reflection Question

As students worked today, whose ideas were heard, valued, and accepted? How can you make adjustments for tomorrow to ensure each student's ideas are a part of the collective learning?

Lesson Narrative

In previous units, students counted a collection of up to 120 objects, and organized their counts into tens to make counting quicker and more accurate. Students represented their collections using drawings, numbers, and equations. This work was foundational for students' understanding the structure of tens and ones in 2-digit numbers.

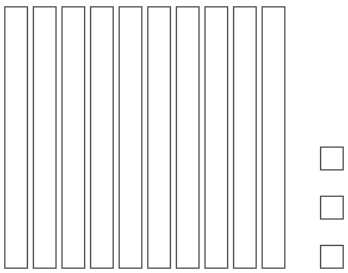
The purpose of this lesson is to organize and count a collection between 90 and 120 objects. In Activity 1, students count physical objects, and represent their collection 3 different ways using drawings, words, and numbers. Students may choose to use 10-frames, plates, cups, or any other tool that will help them organize their count. In Activity 2, students count images on paper, and consider how to keep track when the objects being counted cannot be physically manipulated.

Student-facing Learning Goal: Let's organize and count collections up to 120.	
Warm-up Narrative: What Do You Know About 103?	**Addressing CCSS:** 1.NBT.A.1

The purpose of this What Do You Know About is to invite students to share what they know and how they can represent the number 103. The warm-up allows students to share multiple ways to represent a number using tens and ones.

Task Statement
What do you know about 103?

Student Responses
Sample responses:

- It's 3 more than 100.
- It's 10 tens and 3 ones.
- 

Launch/Activity

- Display the number.
- "What do you know about 103?"
- 1 minute: quiet think time
- Record responses.
- If needed: "How could we represent the number 103?"

Synthesis

- "How could we represent the number 103 using tens and ones?"
- "What connections do you see between different answers?"

Activity 1 Narrative: Counting and Representing Collections

Addressing CCSS: 1.NBT.A.1, 1.NBT.B.2

The purpose of this activity is for students to count a collection of between 90 and 120 objects. As students count, they apply what they have learned about grouping objects to make counts more efficient and accurate. Students may represent their count in the different representations they have worked with, including base-ten drawings, words (_____ tens _____ ones), expressions, and numbers.

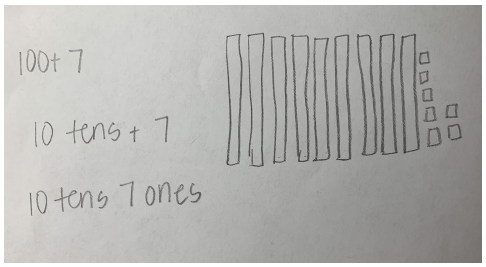
Task Statement
How many objects are in your collection?

Represent your collection in different ways.

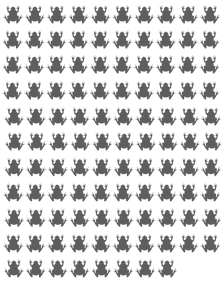
Student Responses

Launch/Activity

- Give each student a bag of objects and access to 10-frames and plates or cups.
- "How many objects are in your collection? Represent your collection in as many ways as you can using drawings, words, and numbers. When you finish counting and representing a

<table>
<tr>
<td>Answers vary. Sample response:
 
</td>
<td>bag, you can trade bags with someone else. ”
• 15 minutes: independent work time
• Monitor for students who:
  ○ determine the amount in their quantity by making groups of 10 and singles
  ○ create a drawing of unmarked tens and ones

Synthesis
• Display selected student work.
• “How did this student count and represent their collection?” (They drew tens and ones, counted the number of tens, and added the ones.)
• “What is the same about these representations? What is different?” (The number of hundreds and ones are the same, even though they are represented in different ways—numbers or drawings.)</td>
</tr>
<tr>
<td>Activity 2 Narrative: How Many Frogs?</td>
<td>Addressing CCSS: 1.NBT.A.1, 1.NBT.B.2</td>
</tr>
<tr>
<td colspan="2">The purpose of this activity is to count images and write a number to represent the quantity. Students count an organized arrangement of images. The arrangement is designed to encourage kids to count by 10, because each row, except the last, has the same number of frogs in it. Some students may determine the number of tens and ones (10 tens 8 ones is 108). Some students may skip count the groups and count on by ones (10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 101, 102, 103, 104, 105, 106, 107, 108). Other students may count by ones, keeping track of objects counted by marking each in some way.</td>
</tr>
<tr>
<td>Task Statement
How many frogs are there?</td>
<td>Launch/Activity
• Groups of 2
• “How many frogs are there?”
• 3 minutes: independent work time
• “Explain how you counted to your partner. If you got different answers, count together.</td>
</tr>
</table>



There are _____ frogs.
Explain how you counted.

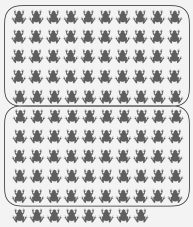
Student Responses
108. Sample responses:

- There are 10 in each row and 8 in the bottom row. 10 tens 8 ones.
- 10, 20, 30, 40, 50, 60, 70. 80. 90, 100, 101, 102, 103, 104, 105, 106, 107, 108
- I counted a group of 50 and another group of 50. 50 + 50 = 100. Then 101, 102, 103, 104, 105, 106, 107, 108.

- 3 minutes: partner work time
- "Write the number of frogs and explain how you counted."
- 3 minutes: independent work time
- Monitor for students who count by:
    - counting all, keeping track accurately by marking images
    - circling groups of 10, skip counting the groups, counting on by ones
    - circling groups of 10, using the number of tens and ones to determine the answer (10 tens 8 ones is 108)

Synthesis

- Display student work that shows counting or grouping into tens.
- "How did _____ know that they could count by tens?" (The rows are the same length. I counted the first one and it had 10 and the second one had 10, so I knew they were all 10 until I got to the last one.)
- Display the image:



- What do you notice?" (They circled groups of 50 and 50. They may have added 50 + 50 to get 100. They counted on to 108.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.

Lesson Synthesis

"How is counting a collection the same as counting images on paper? How is it different?" (You can keep track when you count—one you can group by placing the items near each other, on paper you can circle the items to show groups.)
30 seconds: quiet think time
1 minute: partner discussion
Share responses.

Suggested Center Activities:
Matching Numbers (Unit 4, Center B)
Writing Numbers (Unit 6, Center B)

1.8 Lesson 2: A Classroom Inventory

Teacher-facing Learning Goals

- Organize, count, and represent a large collection of objects.
- Count forward and backward between 1 and 120.

Addressing CCSS: 1.NBT.A.1, 1.NBT.B.2

Lesson Purpose
The purpose of this lesson is for students to organize, count, and represent a large collection of objects. Students also practice counting forward and backward between 1 and 120.

Materials Needed

Gather

- display image (warm-up, activity 1)
- collections with up to 120 math tools (pencils, counters, pattern blocks or other math materials)
- 10-frames
- plates or cups

Copy

- Create a set of 1.8.A.2 Blackline Master cards for each group of 5 students.

Cool-down: A Counting Collection

Noah has a collection of 104 pencils.
Explain how he can organize his collection to make it easy to count.

1. Draw a picture.
2. Explain using words or numbers.

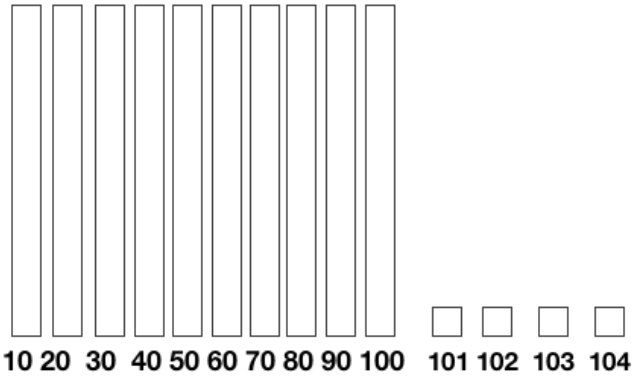
_____

_____

_____

Student Responses

Answers vary. Sample response:



Noah could group his pencils by tens and ones. Skip count the tens to 100, 101, 102, 103, 104.

Teacher Reflection Question

In grade 2, students extend their understanding of place value to three-digit numbers. How does the grade 1 work with place-value prepare them for that future learning?

Lesson Narrative

In previous lessons, students organized and counted collections of up to 120 objects and images.

The purpose of this lesson is for students to count large quantities as they engage in the real-world application of inventorying the classroom. In Activity 1, students play a game that allows them to

practice oral counting to support their work in the next activity. In Activity 2, students organize and count materials from around the classroom. Students consider ways to group the materials to make counting more accurate and efficient.

Student-facing Learning Goal: Let's inventory our math tools.

Warm-up Narrative: How Many Do You See? Quantities within 100	**Addressing CCSS:** 1.NBT.C.4

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. In this activity, students have an opportunity to look for and make use of structure (MP7) because the images are shown as some number of tens and ones. Students use the tens and ones structure to organize, determine, and represent the quantity of objects in their inventories.

Task Statement

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

Image 1

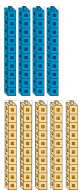


Image 2

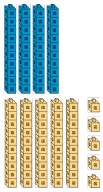
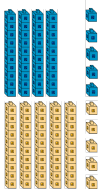


Image 3



Student Responses

Launch/Activity

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

Synthesis

- "How does seeing how many tens and ones there are of each color help you determine how many in total?" (I can think of them as __ tens or __0 and use what I know about adding tens together.)
- "What equation can we write for each image?" (40 + 50 = 90, 40 + 55, 40 + 50 + 10)

Sample responses: • 90: 4 + 5 = 9, but in tens. • 95: 90 from before, and 5 more. • 100: 90 from before, and 5 + 5 more.	
Activity 1 Narrative: Sparkle	**Addressing CCSS:** 1.NBT.A.1
The purpose of this activity is for students to count forward and backward within 120 starting at a number other than 1. Students are given a range of numbers to count and the "sparkle" numbers. As students count around the circle, a student says, "sparkle" instead of the designated number. During the activity synthesis, the teacher uses the sparkle card to count around the classroom 2 times. Students who are still working on the count sequence can be grouped together and practice counting using one card. In this variation, when a student says sparkle, they sit down. Once all the numbers are counted, students who are still standing count the numbers on the card again. They continue to count until all students are sitting.	
Task Statement N/A **Student Responses** 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, SPARKLE, 69, 70, 71, 72, 73, 74, 75	**Launch/Activity** • Groups of 5 • Arrange the whole group in a circle. • "Today we are playing a new game called Sparkle. In this game there is a special number called the sparkle number. We will count around the circle and when we get to the special number, you will say 'sparkle' instead of the number." • Display the image:  • "Let's practice by counting together starting at 1. 5 is our sparkle number." (1, 2, 3, 4, sparkle, 6, 7, 8, 9, 10.) • "When you play Sparkle in your groups, you will get a card that tells you a number to start counting at and a number to end your count. It also tells

	you what the Sparkle number is." • Display the image:  • "This card tells us we will start counting at 50 and end our count at 75. The student who is supposed to say 68 will say 'sparkle' instead. Let's try it, but this time we count around the circle." • Share responses. • "In this game, you will be in groups of 5. You will each take turns counting around your circle like we just did as a whole class. One person will pick a card and read it to the group. Some cards ask you to count forward, and some cards ask you to count backward. The person who picks the card starts counting. Make sure you say 'sparkle' instead of the special number. Then the next person picks a card and you play again." • 10 minutes: small group work **Synthesis** • "Let's play two rounds of Sparkle as a class." • Display the image:  • Share responses. • "How did you know what number to say after 100?"

Activity 2 Narrative: A Classroom Inventory: Math Tools	**Addressing CCSS:** 1.NBT.A.1, 1.NBT.B.2
The purpose of this activity is for students to organize and count objects within the classroom. Students represent their count in 3 ways: with a drawing, a number, and words. Some students may make groups of 10 to count, while others may group by larger quantities and use addition to find the total.	

Task Statement

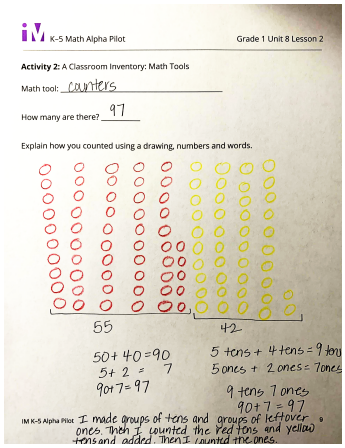
Math tool:

_____

How many are there? _____

Explain how you counted using a drawing, numbers, and words.

Student Responses



Launch/Activity

- Groups of 4.
- Give each group of 4 students 2 different collections to count, and access to cups, plates, and 10-frames.
- "Each group of 2 will be given a collection of math tools to inventory. That means that you find out how many items are in the collection. Each group of 2 will represent their collection using drawings, words, and numbers. Then trade collections with the other group and count and represent how many. Compare your counts. Make sure each small group agrees about how many tools are in each collection."
- 20 minutes: partner work time
- Monitor for groups that organized, counted, and represented the objects using expressions.

Synthesis

- Have selected groups of 2 share.
- "What other expressions can we write to represent this number (97)?" (55 + 40 + 2, 50 + 5 + 42)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Record responses.
- Have selected groups share as time allows.

Lesson Synthesis
"Jada did an inventory of a bag of linking cubes. She found that there were 38 red cubes and 59 blue cubes. How can she determine how many cubes are in her bag without counting? Explain your thinking." (We can add the tens and tens and ones and ones. We add 50 + 30 = 80. Then 8 + 9, which is the same as 7 + 10 = 17. 80 + 17 = 97.)
1 minute: quiet think time
1 minute: partner share
Share responses.
As students share their thinking, encourage them to describe the steps Jada would compute to determine the total.

Suggested Center Activities:
Addition: 4 in a Row (Unit 5, Center D)
Target 90 (Unit 5, Center D)

1.8 Lesson 23: Story Time

Teacher-facing Learning Goals
- Analyze story problems.
- Match equations to story problems.

Addressing CCSS: 1.OA.A.1, 1.OA.D

Lesson Purpose
The purpose of this lesson is for students to analyze story problems of all types and match them with both drawings and equations.

Materials Needed

Gather	Copy
• display image (warm-up)	• Create a set of 1.8.E.23 cards for each group of 2 students.

Cool-down: Which Equations Match the Story?

Jada has some apples. She gives 4 apples to Tyler. Now Jada has 9 apples. How many apples did Jada have before she gave apples to Tyler?

Which 2 equations match the story?

A. 9 + 4 = ____
B. 9 - 4 = ____
C. ____ - 4 = 9
D. ____ + 4 = 9

Student Responses
A, C

Teacher Reflection Question
Many of the story problems students see in this lesson are challenging to interpret, because the language can suggest the opposite operation or because the starting value is unknown. How does matching the problems with equations and drawings help students make sense of the problems?

Lesson Narrative

In previous units, students learned how to solve different story problem types. The purpose of this lesson is to look at various types of story problems, including: Add To/Take From, Compare, and Both Addends Unknown. Students first sort the problems in a way that makes sense to them. Then they match some of the problems with different representations including equations, base-ten drawings, and connecting cubes. Students see that one drawing or equation can match different story problems. This is closely related to the fact that addition and subtraction are two different ways of viewing the same problem. For example, the equation 9 + ___ = 15 is an addition equation. But it could be solved by subtracting 9 from 15. In other words, it is equivalent to the equation 15 - 9 = ____.

The purpose of the lesson synthesis is to compare and contrast two stories that match the same equation.

Student-facing Learning Goal: Let's look at story problems.

Warm-up Narrative: Which One Doesn't Belong: Expressions	**Addressing CCSS:** 1.OA.C.6, 1.OA.B.3

This warm-up prompts students to carefully analyze and compare equations. In addition to calculating the value of each expression, students also think about the structure of each expression, including both the operations and the numbers.

The synthesis addresses an equation with addition and an equation with subtraction to focus student attention on operations since interpreting operations in story problems will be important in this lesson.

Task Statement

Which one doesn't belong?

A 10 = 6 + 4	B 16 - 5 = 11
C 11 = 6 + 4 + 1	D 3 + 8 = 11

Student Responses

Sample responses:

- A doesn't belong because it doesn't have the value 11.
- B doesn't belong because it doesn't use addition. It doesn't belong because 11 is not written using all single-digit numbers.
- C doesn't belong because 11 is not written with just two numbers.
- D does not belong because the smallest number is first. It does not belong because it does not have the digit 6.

Launch/Activity

- Groups of 2
- Display the image.
- "Pick one that doesn't belong. Be ready to share why it doesn't belong."
- 1 minute: quiet think time
- 2–3 minutes: partner discussion
- Record responses.

Synthesis

- Display equations B and D.
- "How are the equations the same? How are they different?" (They both have the value 11. The first equation uses subtraction while the second one uses addition. The 11 is on the right hand side in the first equation and on the left hand side in the second equation. In the second equation, 11 is written using 3 numbers and there are only 2 in the first equation.)

Activity 1 Narrative: Sorting Stories

Addressing CCSS: 1.OA.A

The purpose of this activity is to sort story problems. The stories include Add To, Take From, Compare, and Both Addends Unknown problem types. Students may sort the problems in many ways, including:

- stories with an action
- stories comparing two quantities
- stories with one unknown and stories with two unknowns

- stories where two numbers are put together or added
- stories where one number is taken from another number
- stories where the difference is unknown

The goal of the activity synthesis is to discuss different ways students sorted the problems, and since they did not see the same set of problems, give them time to think about how each method of sorting would apply to their story problems.

Task Statement
N/A

Student Responses
Sample responses:

Group A

- The second and third problems have comparisons of two separate amounts and the others do not.
- The fourth problem has two unknowns and the others do not.

Group B

- In the second and third problems there is a missing part.
- The fourth and fifth problems are taken away.

Launch/Activity

- Groups of 2
- Assign pairs the story problems in Group A or the story problems in Group B.
- "Sort the story problems in a way that makes sense to you."
- 5 minutes: independent think time
- "Discuss and come to an agreement on how to sort the problems with your partner."
- 5 minutes: partner discussion
- Monitor for students who sort according to the problem type, the operation they would use to solve the problem, or the action in the problem.

Synthesis

- Invite selected students to share how they sorted the stories, highlighting methods listed in the narrative.
- "How would this way of sorting work with your set of story problems?"
- Display card A4.
- "How is this story different from the others?" (I only know the total. I don't know either part. There is more than one way to solve the problem.)
- "How can you find one solution to this problem?" (I can pick a number of songs for Noah, like 5. And then Diego had the rest of the songs, 11.)

	• "How can you find another solution to the problem?" (I can pick a different number of songs for Noah, like 6. Then Diego had 16 - 6 or 10 songs.)
Activity 2 Narrative: Representing Stories	**Addressing CCSS:** 1.OA.A, 1.OA.D

The purpose of this activity is to match some of the stories from the previous activity to different representations, including equations, drawings of connecting cubes, and base-ten blocks. In several cases, one representation can match different problems. This is the focus of the activity synthesis. An equation such as 10 + ___ = 15 can model many different situations, including Add To, Take From, and Compare:

- Jada has 10 books and got some more books. Now she has 15 books. How many books did Jada get?
- Lin has 15 books. She gave 10 books to Noah. How many books does Lin have now?
- Han has 10 books and Elena has 15 books. How many fewer books does Han have than Elena?

Equations and drawings are important tools to make sense of and represent story problems. In order to solve the story problems, these tools always need to be interpreted in terms of the story.

Task Statement

Take out these cards:

- A2
- A3
- B1
- B2
- B3
- B4

Write the letter of the story problem next to the equation that matches it.

One equation can match more than one story problem and one story problem can match more than one equation.

14 - 9 = ___
6 + ___ = 11
___ - 4 = 13
13 + 4 = ___
12 - 3 = ___

Launch/Activity

- Groups of 2
- Display and read story B4: Clare has 12 apples. She gives 3 apples to Noah. How many apples does Clare have now?
- Display the equation: 12 - 3 = ___
- "How does the equation represent this story?" (The 12 is the apples Clare had and - 3 is for the 3 apples that she gives Noah. The blank is the number of apples Clare has now.)
- Read the problem instructions.
- 5 minutes: independent work time
- "Share your matches with your partner and discuss any differences you have in your matches."
- 5 minutes: partner discussion
- Monitor for students who match several equations and pictures with the different stories.

Student Responses

14 - 9 = ?	A2, B3
6 + ___ = 11	B2, A3
___ - 4 = 13	B1
13 + 4 = ___	B1
12 - 3 = ?	B4

Synthesis

- Display: 14 - 9 = ____
- "Which 2 stories match this equation?" (A2 and B3)
- "How are the stories the same? How are they different?" (In both stories there is a 14 and a 9. In the apple story 14 is the total. In the pencil story 14 is one part. In the apple story 9 is one kind of apple. In the pencil story it is how many more pencils Elena has than Andre.)

Lesson Synthesis

"Today we looked at how story problems are the same and how they are different and we matched those stories with equations."

Display stories A3 and B2:

- Diego has 6 apples. Lin has some apples. Together, Lin and Diego have 11 apples. How many apples does Lin have?
- Clare has 6 colored pencils and Tyler has 11 colored pencils. How many more colored pencils does Tyler have?

"How are the stories the same?" (In both stories, there is a 6 and an 11. In both stories I need to find how much to add to 6 to get 11.)

"How are the stories different?" (In the first story, there are 11 apples total. In the second story there are 11 pencils and some more pencils. In the first story, 6 is one part of the 11. In the second story there are 6 and there are also 11 and they are being compared.)

Suggested Center Activities:

Card Sort With Expressions (Unit 2, Center D)
Matching Numbers (Unit 4, Center B)
Subtraction Bingo (Unit 7, Center D)

1.8 Lesson 24: Solving Story Problems

Teacher-facing Learning Goals

- Solve Start Unknown and Compare story problems.

Addressing CCSS: 1.OA.A.1

Lesson Purpose
The purpose of this lesson is for students to solve story problems with challenging language.

Materials Needed

Gather
- display image (warm-up)
- connecting cubes or counters
- markers, crayons, or colored pencils
- (optional) chart paper

Copy
- (optional)1.8.B Blackline Master Grid Paper

Cool-down: Learning from Classmates

What is one thing that you changed in your representation after looking at your classmates' work?

Student Responses
Sample response:
I put in an equation. I changed my equation. I made a different drawing. I showed the problem using connecting cubes.

Teacher Reflection Question
What changes did students make to their solutions after the gallery walk? Did they add a drawing or an equation or correct a mistake?

Lesson Narrative

In the previous lesson, students sorted a set of problems and matched some of them to equations.

The purpose of this lesson is to solve story problems. The focus is on two different types of stories which are often challenging: Start Unknown and Compare, Bigger or Smaller Unknown where the language can suggest a different operation, that is, addition instead of subtraction or vice versa. Students work in pairs to solve one problem and then go on a gallery walk to look at student work solving all the problems. Afterward, they take what they have learned and work to revise their thinking and improve their own representations. The goal of the activity synthesis is to discuss these improvements.

The cool-down should be completed before the Lesson Synthesis so that students can share their responses during the Lesson Synthesis.

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

Warm-up Narrative: Estimation Exploration: A Full Classroom

Addressing CCSS: 1.NBT.1.A

The purpose of this Estimation Exploration is to practice the skill of estimating a reasonable answer based on experience and known information. It gives students a low-stakes opportunity to share a mathematical claim and the thinking behind it (MP3). In this lesson, students will be working on Compare story problems, so thinking about more and fewer will be central. The warm-up synthesis focuses on using this kind of language to describe the estimates.

Task Statement

How many students are there in the image?
Record an estimate that is:

too low	about right	too high

Student Responses

Sample response:

too low	about right	too high
30	60	100

Launch/Activity

- Groups of 2
- Display the image.

- "What is an estimate that's too high?" "Too low?" "About right?"
- 1 minute: quiet think time
- 1 minute: partner discussion
- Record responses.

Synthesis

- Invite a student to share an estimate that is too low.
- "There are *more* than ____ students in the image."
- Invite a student to share an estimate that is too high.
- "There are *fewer* than ____ students in the image."
- "Today we will solve word problems that use more and fewer."

Activity 1 Narrative: Story Problems	**Addressing CCSS:** 1.OA.A.1

The purpose of this activity is to solve Compare and Start Unknown story problems. The Compare problems use language that requires careful reading as opposed to looking for key words, that is, "fewer" is used when the operation is addition and "more" is used when the operation is subtraction. Students may show their work in their books or on a poster to prepare for the gallery walk in the next activity.

The goal of the activity synthesis is to discuss the language in the two Compare problems and how students interpreted the two Start Unknown problems.

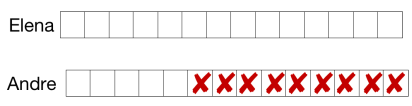
Task Statement

Solve your problem. Show your thinking using drawings, numbers, or words.

1. Clare has 13 songs on her playlist. She has 4 fewer songs on her playlist than Tyler. How many songs are on Tyler's playlist?
2. Elena has 14 colored pencils. She has 9 more colored pencils than Andre. How many colored pencils does Andre have?
3. Jada has some apples. She gives 4 apples to Tyler. Now Jada has 9 apples. How many apples did Jada have before she gave apples to Tyler?
4. Lin has some songs on her playlist. She puts 8 more songs on the list and now she has 17 songs on her playlist. How many songs were on Lin's playlist at first?

Student Responses

1. 17 songs. 13 + 4 = 17.
2. 5 pencils. 14 - 9 = 5.



3. 13 apples. ? - 4 = 9. I added 4 to 9 to find how many apples Jada has and 4 + 9 = 13.
4. 8 songs. ? + 9 = 17. I subtracted 9 from 17 to

Launch/Activity

- Groups of 2
- Give students access to connecting cubes or counters and grid paper.
- Assign pairs a problem to work on.
- "You are going to solve a story problem. Use words, drawings, objects, or equations to show your reasoning."
- "Read and solve your problem on your own."
- 4 minutes: independent work time
- "Work with your partner to agree on a solution and make a display of your work."
- 6 minutes: partner work time
- Monitor for students who use objects such as connecting cubes and for students who make drawings or write equations to show their work.

Synthesis

- Invite a student who used objects to share how the objects helped to represent the problem.
- "____ used connecting cubes to show the songs on the playlist in the story."
- "____ made a drawing to show the apples in the story."
- "____ wrote an equation to represent the

<table>
<tr><td>find how many songs were on Lin's playlist before. 17 - 10 = 7. So 17 - 9 is one more or 8.</td><td>pencils in the story."
• "In the next activity, you will look at how other students solved the problems. Watch for how they represent the story. Do they use objects, drawings, or equations?"</td></tr>
<tr><td>Activity 2 Narrative: Story Problem Gallery Walk</td><td>Addressing CCSS: 1.OA.A.1</td></tr>
<tr><td colspan="2">The purpose of this activity is for students to observe the work of their classmates, giving them a chance to learn more about the story problems they did not solve and giving them time to use what they learned to improve the solution to their story problem.

The goal of the activity synthesis is to go over the different ways students represented the problems. This may include physical objects, drawings, and equations.</td></tr>
<tr><td>Task Statement
N/A

Student Responses
N/A</td><td>Launch/Activity
• Groups of 2
• "Read all 4 problems in your book. Then, go around the room with your partner and look at your classmates' work."
• "What have they done that is the same as your work? What is different?"
• 10 minutes: partner discussion time

Synthesis
• Invite students to share equations that they used to represent the story problems.
• Display the equation: 13 + 4 = 17
• "_____ used this equation to represent problem A. How does the equation represent the story?" (The 13 is for the songs on Clare's list and Tyler's list has 4 more, so that means we have to add 4."
• Display the equation: 13 - 4 = 9
• "_____ wrote this equation to represent problem C. How does the equation represent the story?" (9 is how many apples Jada had left after giving 4 to</td></tr>
</table>

	Tyler. So the - 4 represents the 4 apples given to Tyler and the 13 is how many apples Jada started with.) • If time permits, allow students to go back and revise their work.
Lesson Synthesis "Share your work from the cool-down." 1 minute: partner discussion Share responses.	
Suggested Center Activities: Card Sort With Expressions (Unit 2, Center D) Matching Numbers (Unit 4, Center B) Subtraction Bingo (Unit 7, Center D)	

1.8 Lesson 25: Asking Math Questions	
Teacher-facing Learning Goals • Write and answer math questions using given information.	
Addressing CCSS: 1.OA.A.1, 1.OA.A.2	
Lesson Purpose The purpose of this lesson is for students to write and answer math questions using a given context and numbers.	
Materials Needed	
Gather • display image (activity 1) • counters or connecting cubes	**Copy** • none

Cool-down: What's the Question?

Lin has 11 pattern blocks. Noah has 3 fewer pattern blocks.

Write a math question that can be answered with this information.

Student Responses
Sample responses:

- How many pattern blocks does Noah have?
- How many pattern blocks do Lin and Noah have together?

Teacher Reflection Question
Asking questions or finding questions to ask gives students an opportunity to engage in work in an open, creative way. Which students were more engaged in the task of creating questions instead of answering them? What can you do to provide more opportunities for them to create questions?

Lesson Narrative

In the previous lessons, students worked with different types of story problems.

The purpose of this lesson is to write and solve story problems. Students first craft their own math questions from some given information. Then they read a new scenario and see student work that answers a question. Students determine what question the work could answer.

The goal of the lesson synthesis is to use the information from Activity 2 to make a comparison, highlighting that the same two quantities can be compared in two different ways using the language of "more" or "less" and that both situations match the same equation.

Student-facing Learning Goal: Let's ask math questions about stories.

Warm-up Narrative: Notice and Wonder: Getting Around Town	**Addressing CCSS:** 1.OA.B

The purpose of this Notice and Wonder is to elicit different questions about given information in preparation for the story problems that students write and answer in this lesson. While students may notice and wonder many things, the most important discussion point will be the types of mathematical questions that can be asked in this situation.

Task Statement	**Launch/Activity**

<table>
<tr>
<td>What do you notice? What do you wonder?

On the street, there are 9 cars, 6 trucks, and 5 bikes.

Student Responses
Students may notice:
• There are more cars on the street than trucks.
• There are fewer bikes on the street than cars.
• There is 1 more truck than there are bikes.
Students may wonder:
• Why is there no question in this story?
• How many cars and trucks are in the street?
• How many cars, trucks, and bikes are in the street?
• How many more cars are there than bikes?</td>
<td>• Groups of 2
• Display the questionless story problem.
• “What do you notice? What do you wonder?”
• 1 minute: quiet think time
• 1 minute: partner discussion
• Share and record responses.

Synthesis
• “What math questions can you ask about this situation?”
• If not mentioned by students, highlight different types of how many questions such as those listed in the student responses.</td>
</tr>
<tr>
<td>Activity 1 Narrative: A Weekend of Biking</td>
<td>Addressing CCSS: 1.OA.A.1, 1.OA.A.2</td>
</tr>
<tr>
<td colspan="2">The purpose of this activity is to use given information to write and then answer different questions. One likely question students will ask is a three addends question, that is, how many hours did three people ride their bikes altogether. They can also ask Compare questions or two addend questions.

The goal of the activity synthesis is to share different questions with a focus on a three addends problem.</td>
</tr>
<tr>
<td>Task Statement
Jada rode her bike for 5 hours this past weekend.
Tyler rode his bike for 10 hours.
Mai rode her bike for 2 hours fewer than Jada.

Write and answer 2 questions using some or all of this information.

Student Responses
Sample responses:
• How many hours did Mai ride her bike?</td>
<td>Launch/Activity
• Groups of 2
• Give students access to counters or connecting cubes.
• Read the problem.
• 5 minutes: individual work time
• “Share your problem with your partner and make sure you agree about the solution.”
• 5 minutes: partner share time
• Monitor for students who write a three</td>
</tr>
</table>

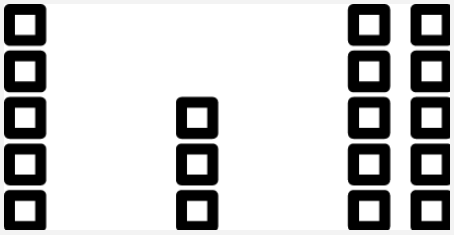
Mai rode for 3 hours since 3 + 2 is 5.

- How many hours did Jada, Tyler, and Mai ride altogether?
  Altogether they rode for 5 + 10 + 3 hours. That's 18 hours since 5 + 3 = 8 and 8 + 10 = 18.
- How many more hours did Tyler ride than Mai?
  7. Mai rode her bike for 3 hours and Tyler rode for 10 hours. 3 + 7 = 10 so Tyler rode for 7 more hours than Mai.

addend problem. They will also first need to find how many hours Mai rode her bike.

Synthesis

- Invite selected students to share their stories.
- "_____'s story asks about all 3 students and the miles they rode. What would you do first to solve the problem?" (Find how far Mai rode.)
- Display the image:



- "How does the image show the miles each person rode?" (The group of 5 shows Jada's miles, the 3 is Mai, and the 10 is Tyler.)
- "How can you use the diagram to see how far the three rode?" (I see 10 and 5 for 15 and then 3 more makes 18.)

Activity 2 Narrative: What Is the Question?

Addressing CCSS: 1.OA.A

The purpose of this activity is to find an appropriate math question, given information, and student work. Students will need to contextualize the numbers in the provided equations using the story information and think carefully about what the operations in the two equations mean in terms of the context. If students finish early, encourage them to make a representation of one or both problems.

The purpose of the activity synthesis is to share questions focusing on the different language that students might use for the second problem, using "more" or "fewer."

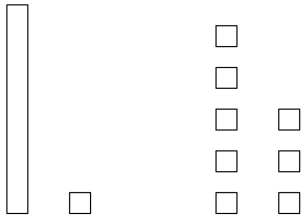
Task Statement

Last summer, Andre read 11 books. Lin read 8 books.

Launch/Activity

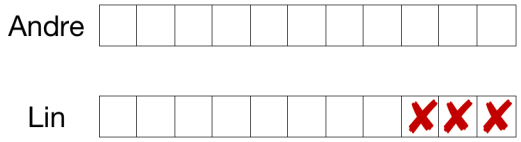
- Groups of 2
- "Last summer, Andre read 11 books. Lin read 8 books."
- "Kiran and Jada each solved a problem

1. Here is Kiran's work:



What question about the books might Kiran be answering?

2. Here is Jada's work:



What question about the books might Jada be answering?

Student Responses

Sample responses:

1. How many books did Andre and Lin read together?
2. How many more books did Andre read than Lin?

about the books. We don't know the question, though!"

- Read the problems for Kiran and Jada.
- 5 minutes: independent work time
- 5 minutes: partner discussion
- Monitor for students who write questions using words such as "more" and "fewer" in their questions for Jada's work.

Synthesis

- Invite a student who used "more" to share their question for Jada's work.
- "How did _____ know to compare Andre's and Lin's books?" (I knew I needed to compare to get a difference. 11 - 8 = 3 shows the difference between Lin's and Andre's books.)
- "Where do you see Andre's and Lin's books represented in the drawing?" (There are 11 squares for the 11 books Andre read. There are 8 squares crossed off for the books that Lin read.)
- "Where do you see the answer to the question in the drawing?" (There are 3 squares left that are not crossed out. This means Andre read 3 more books than Lin.)

Lesson Synthesis

Display:

Jada rode her bike for 5 hours this past weekend. Mai rode her bike for 2 fewer hours than Jada.

"How can I compare Mai and Jada using 'more' instead of 'fewer'?" (Jada rode 2 hours more than Mai.)
"How many hours did Mai ride her bike?" (3)
Display the equation:
3 + 2 = 5
"How does the equation show the relationship between Jada and Mai?" (It shows that Jada's hours are 2 more than Mai's or that Mai's hours are 2 fewer than Jada's.)

Suggested Center Activities:
Card Sort With Expressions (Unit 2, Center D)
Matching Numbers (Unit 4, Center B)
Subtraction Bingo (Unit 7, Center D)

1.8 Lesson 26: Telling Stories about Our School

Teacher-facing Learning Goals

- Write story problems.

Addressing CCSS: 1.OA.A

Lesson Purpose
The purpose of this lesson is for students to write story problems about a context they choose.

Materials Needed

Gather	Copy
• display image (warm-up, activity 1) • (optional) magazines, newspapers, or books • (optional) clipboards and paper	• (optional) 1.8.E.26 Blackline Master for each group of 2 students

Cool-down: Describing the Math Walk
What did you see or observe that helped you write your story problem?

Student Responses
Sample response: I saw some students sitting on the floor and some students sitting at their desks in a classroom.

Teacher Reflection Question
What do students notice in and around the classroom? If they are unable to count the objects, do they estimate? How can you encourage them to make estimates?

Lesson Narrative
In previous lessons, students have solved story problems and asked math questions when given information and student work. The purpose of this lesson is to ask math questions in different situations. First, they are given a picture and an expression and create a story based on the picture using given expressions. Then, students go on a math walk, either in the classroom, in the school, or outside, and make observations that they use to write another story problem. The goal of the lesson synthesis is to reflect on the different math stories students told and heard throughout the lesson.

Student-facing Learning Goal: Let's tell math stories about our school.

Warm-up Narrative: Notice and Wonder: Vegetable Baskets

Addressing CCSS: 1.NBT.A.1

This prompt gives students opportunities to look for and make use of structure (MP7). The specific structure they might notice is that there are different vegetables and they may wonder how many of each kind of vegetable there are and how many more or fewer of one kind there are than another. The mathematical questions they ask in this situation will help them in the lesson as they ask math questions in other situations.

Task Statement

What do you notice? What do you wonder?

Student Responses

Launch/Activity

- Groups of 2
- Display the image.
- "What do you notice? What do you wonder?"
- 1 minute: quiet think time
- 1 minute: partner discussion
- Share and record responses.

Synthesis

- Focus the discussion on mathematical questions about the number of each kind of vegetable and how they compare.

Students may notice:

- There are a lot of vegetables.
- There are tomatoes.
- There are mushrooms.
- There are 2 kinds of onions.

Students may wonder:

- What is that bumpy vegetable?
- How many tomatoes are there?
- Are there more yellow onions than red onions? How many more?

Activity 1 Narrative: Playing in the Snow

Addressing CCSS: 1.OA.A.1

The purpose of this activity is to tell and solve math stories given an expression and an image. The image is intended to motivate ideas about stories to tell and questions to ask, but may not correspond to the numbers in the expression. Students may choose which expression to use or expressions may be assigned by the teacher to ensure that both addition and subtraction stories can be discussed.

The goal of the activity synthesis is to share story problems of different types and discuss how they are the same and how they are different.

Task Statement

Expressions:

1. 8 + 5
2. 13 - 8
3. 13 - 5.

Write a math story that can be answered with the expression.

Trade stories with your partner and answer your partner's question.

Student Responses

Answers vary. Sample responses:

Launch/Activity

- Groups of 2
- Display the image:

- "What do you notice?" (There are a lot of people and birds. There are some kids and some grown-ups.)
- Display the expressions: 8 + 5, 13 - 5, 13 - 8
- "You are going to write a math story

1. There are 8 kids playing in the snow and 5 birds flying near them. How many people and birds are there together? 2. There are 8 kids playing in the snow and 13 people watching them. How many more people are watching than playing? 3. There were 13 birds standing in the snow. Then 5 of them flew away. How many birds are standing in the snow now?	that matches one of these expressions. You can use the image for ideas for your math story." • 5 minutes: independent work time • "Trade stories with your partner and solve your partner's problem." • 5 minutes: partner work time • Monitor for students who write different types of story problems including add to, take from, and compare. **Synthesis** • Invite selected students to share their stories or share the stories in the student responses. • Display the story: There are 13 birds on the ground and 5 birds flying. • "How can you improve this story?" (It has no question. I need to ask a math question. I could ask how many birds there are altogether. I could ask how many more birds there are on the ground than there are flying.) • "Are these questions represented by the expression 13 - 5?" (The question how many more birds are on the ground than there are flying is represented by 13 - 5.)
Activity 2 Narrative: Making Math Stories	**Addressing CCSS:** 1.OA.A.1
The purpose of this activity is for students to write math stories. Several options are available to help them decide on a context, including: • looking at pre-selected images such as the one used in the lesson or in the provided blackline master • looking at images in magazines, newspapers, or books • looking around the classroom	

- leaving the classroom to look in or outside the school

Whichever method is used, it is important to begin the class by communicating to students the types of mathematical ideas to look for. If students come up with a context, but are not able to count the items, display a set of numbers (such as 3, 6, 8, 12, 17) that students can use to write their story problem.

Students may require additional time to work on developing their stories. They continue to work on them in the next lesson but an additional class may be helpful.

Task Statement
Write a story problem.

Student Responses
Answers vary. Sample responses for the water park picture:

- There were 14 kids swimming and 5 kids going down the slide. How many kids were there altogether?
- There were 18 kids in the swimming pool and 11 walking next to the pool. How many more kids were swimming than were walking next to the pool?
- There are 5 kids going up the stairs to the water slide. There are 6 kids going down the slide. There are 8 kids in the water. How many kids are there altogether?

Launch/Activity

- Give students access to clipboard and paper to take notes while they think of contexts.
- Tell a story about something in the classroom: “There is a shelf of books. During class, we took 7 books off the shelf. There were still 12 books on the shelf. ”
- “What are some math questions you can ask about this situation?” (How many books were on the shelf before we took the books away? How many more books stayed on the shelf than the books we took off the shelf?)
- “What are some other math questions you can ask about things in the classroom?” (How many chairs are there? How many students? How many more chairs than students? How many square and trapezoid pattern blocks are in the bag? How many more squares are there than trapezoids?)
- 2 minutes: independent think time
- 1 minute: partner share time
- “Today we are going to _____. Your goal is to take notes about what you see.”
- “Focus on things that can be counted or that you can tell a math story about.”
- “If you have time, you can count or you

	can estimate what you see. If not, I will give you numbers you can use in your story." • 8 minutes: math walk • "Choose what your math story will be about and share with your partner." • Monitor for students who choose different things to write about, and if they begin to write their stories, who write different types of stories: single-step versus multi-step, add to, take from, and compare. **Synthesis** • Invite students to share stories of different types such as those in the student responses.

Lesson Synthesis
"Today we wrote math stories using a picture and by looking around the school, to find mathematical ideas for the stories."
"Share with your partner one of the stories you heard today that you liked and explain why."
3 minutes: partner discussion time

Suggested Center Activities:
Card Sort With Expressions (Unit 2, Center D)
Matching Numbers (Unit 4, Center B)
Subtraction Bingo (Unit 7, Center D)

1.8 Lesson 27: Sharing Stories

Teacher-facing Learning Goals
- Present math stories and solutions.
- Analyze and improve stories and solutions.

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

Lesson Purpose
The purpose of this lesson is for students to communicate math stories and their solutions. Students give and interpret feedback to improve the problems.

Materials Needed	
Gather • chart paper • markers, crayons, or colored pencils • sticky notes	**Copy** • none
Cool-down: Story Problem Reflection What have you learned about writing and solving story problems? **Student Responses** I learned that representing the story in many ways helps to understand and communicate what is happening. Pictures, drawing, words, and equations all help to understand what is happening in the story.	
Teacher Reflection Question What representations do students prefer for their stories? What changes do students make to their posters after the gallery walk?	

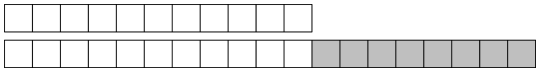
Lesson Narrative
In the previous lesson, students created stories based on their observations of the world. The purpose of this lesson is to solve the stories and make a poster showing their work. Then students take a gallery walk to see and compare the different stories and representations. They have an opportunity to revise their posters after the gallery walk. The goal of the lesson synthesis is for students to share what they have learned from looking at the posters.

Student-facing Learning Goal: Let's share our math stories.	
Warm-up Narrative: True or False: More or Less	**Addressing CCSS:** 1.OA.D, 1.NBT.C
The purpose of this True or False is to elicit strategies and understandings students have for place value and the operations of addition and subtraction. These understandings help students deepen their understanding of the properties of operations and will be helpful in this lesson when students will solve their story problems.	

Task Statement Is each statement true or false? Be prepared to explain your reasoning. 57 + 20 = 59 66 - 4 = 62 17 + 76 = 59 **Student Responses** • False. Sample response: it's 77 • True. Sample response: 6 - 4 is 2 so 66 - 4 = 62 • False. Sample response: the sum is larger than 76	**Launch/Activity** • 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** • Invite students to share strategies for how they knew that the 17 + 76 = 59 is false without solving. • Highlight that it is possible to see that it is false without calculating the correct answer, by observing that 17 + 76 is greater than 76 and 59 is less than 76.
Activity 1 Narrative: Solving Story Problems	**Addressing CCSS:** 1.OA.A.1, 1.OA.A.2
The purpose of this activity is to make a poster showing the story problems from the previous lesson and one or more ways to solve the problem. As students work, encourage them to find a different way to solve the problem or a different way to represent the problem once they have completed a solution. The goal of the activity synthesis is to share different representations of the story problems.	
Task Statement Make a poster of your story problem. Make sure to: • Include your story with a question. • Show your thinking using drawings, numbers, or words. • Show the answer to your story problem. **Student Responses** Answers vary. Sample responses: There are 19 kids playing in the water.	**Launch/Activity** • Groups of 2 • "Today you are going to make a poster showing your story problem and how you solved it." • "If you have time, you can show different ways to solve the problem using pictures, words, or symbols." • 10 minutes: quiet work time • "Share your poster with your partner and make revisions if needed." • 5 minutes: partner discussion time • Monitor for students who use different representations of their problems,

<table>
<tr>
<td>There are 11 kids walking near the pool.

How many more students are playing in the water than walking near the pool?

19 - 11 = 8

There are 8 more kids playing in the water than there are walking near the pool.</td>
<td>including drawings of objects, base-ten drawings, and expressions or equations.

Synthesis
• “In the next activity, you are going to look at the posters and leave comments.”
• “What are some things that you will look for when you look at the posters?” (Do I understand the story? Do I agree with the solution? Can I follow the reasoning?)</td>
</tr>
<tr>
<td>Activity 2 Narrative: Story Problem Gallery Walk</td>
<td>Addressing CCSS: 1.OA.A.1, 1.OA.A.2</td>
</tr>
<tr>
<td colspan="2">The purpose of this activity is for students to see the different story problem posters their classmates made. After the gallery walk, students have a chance to make revisions to their own posters. This could be making corrections, but it could also be adding different representations based on what they learned from seeing the other posters.

The goal of the activity synthesis is to reflect on how the posters were the same and how they were different.</td>
</tr>
<tr>
<td>Task Statement

NA

Student Responses

NA</td>
<td>Launch/Activity
• Groups of 2
• Display student posters on tables or walls.
• “Walk around the room with your partner and look at the posters. Talk to your partner about what you notice and what you wonder.”
• “Use your sticky notes to leave comments or questions about the stories and solutions, including things that helped you understand the problem and solutions and any other representations you might add to the poster.”
• 7 minutes: partner discussion time
• “Add or change at least 1 thing on your poster to make it clearer or more complete.”</td>
</tr>
</table>

	• 3 minutes: individual work time • Monitor for students who changed their posters, making corrections or making more representations based on feedback and on their observations. **Synthesis** • "How are the posters the same? How are they different?" (They all show a story. They all show some work solving the story. The numbers are different. The problems are about different things. Some of the stories are about addition, some are about subtraction, some are about both. Some of them show work with drawings and some show equations. The answers are all different.)
Lesson Synthesis "Today we made posters showing our story problems and how to solve them. Then we looked at each other's posters, left comments, and made revisions to our work." "What did you see that you learned from? What is a change you made? Why?" (Answers vary.) 1 minute: quiet think time 1 minute: partner discussion Share responses.	
Suggested Center Activities: Card Sort With Expressions (Unit 2, Center D) Matching Numbers (Unit 4, Center B) Subtraction Bingo (Unit 7, Center D)	