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Putting It All Together
Teacher Guide
Core Knowledge Mathematics™
Unit 8: Putting It All Together

At a Glance

Unit 8 is estimated to be completed in 12 days including 2 days for assessment.

This unit is divided into three sections including 10 lessons.

- Section A—Add and Subtract Within 20 (Lessons 1-3)
- Section B—Story Problems (Lessons 4-6)
- Section C—Numbers to 120 (Lessons 7-10)

On pages 5-6 of this Teacher Guide is a chart that identifies the section each lesson belongs in and the materials needed for each lesson.

There are no new centers in this unit. Students choose from centers that have been introduced throughout the year. Students can work at any previously introduced stages of the centers.
Unit 8: Putting It All Together

Unit Learning Goals

- Students consolidate and solidify their understanding of various concepts and skills on major work of the grade. They also continue to work toward fluency goals of the grade.

In this unit, students revisit major work and fluency goals of the grade, applying their learning from the year.

In Section A, students add and subtract within 20, concurrently working toward the goal of adding and subtracting fluently within 10. In Section B, they practice solving story problems of familiar types (those introduced in earlier units). In Section C, students count and represent numbers within 120.

Each of these topics is critical for students’ readiness for the work in grade 2, in which students will expand their understanding of place value and add and subtract within 100.

What number is shown?

Record an estimate that is too low, too high, and about right.

The sections in this unit are standalone sections, not required to be completed in order. The goal is to offer ample opportunities for students to integrate the knowledge they have gained and to practice skills related to the expected fluencies of the grade.
Section A: Add and Subtract Within 20

Standards Alignments
Addressing 1.OA.C.6, 1.OA.D.8

Section Learning Goals

- Add and subtract within 20.
- Fluently add and subtract within 10.

In this section, students practice adding and subtracting within 20. They also reflect on their fluency with addition and subtraction within 10—by completing an inventory of the sums and differences they do and do not yet know fluently. Students continue to work toward fluency with these expressions and to share the methods they find effective for finding the value of the expressions.

The relationship between addition and subtraction continues to be highlighted here. Doing so reinforces the idea that knowing an addition fact can help us know the related subtraction facts. Students also recognize that they can use known sums and differences within 10 to find the value of sums and differences within 20.

Color the differences whose value you know from memory.

<table>
<thead>
<tr>
<th>10-0</th>
<th>10-1</th>
<th>10-2</th>
<th>10-3</th>
<th>10-4</th>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17 - 9 = [ ]
9 + [ ] = 17
9 + 1 + 7 = 17
9 + [ ] = 17, so 17 - 9 = [ ]

PLC: Lesson 3, Activity 1, Many Ways to Add and Subtract
Section B: Story Problems

Standards Alignments
Addressing 1.NBT.C.4, 1.OA.A.1, 1.OA.A.2, 1.OA.C.6, 1.OA.D.7

Section Learning Goals

- Solve Add To and Take From, Change Unknown story problems in a way that makes sense to them.
- Solve Compare, Difference Unknown story problems in a way that makes sense to them.
- Solve Put Together/Take Apart, Addend Unknown story problems in a way that makes sense to them.

In this section, students revisit some types of story problems that were introduced in earlier units and should be mastered by the end of grade 1. These problem types include:

- Add to and Take From, Change Unknown
- Put Together and Take Apart, Addend Unknown
- Compare, Difference Unknown

*Clare saw 8 sea turtles swimming together in the tank. Some more turtles joined them. Now there are 15 turtles in the tank. How many turtles joined the group?*

Students solve problems in any way that makes sense to them, including creating discrete drawings for each story. Throughout the section, look for ways to connect the methods and representations they use. Doing so helps to deepen students’ understanding of the structure of the problem types and helps them progress toward using representations that are more abstract (such as equations).

The activity and lesson syntheses in the section highlight the relationship between addition and subtraction and the idea of making a 10 to solve problems.

PLC: Lesson 4, Activity 2, Find the Unknown Number
Section C: Numbers to 120

Standards Alignments
Addressing 1.NBT.A.1, 1.NBT.B, 1.NBT.B.3, 1.NBT.C, 1.NBT.C.4, 1.OA.C.6

Section Learning Goals
- Apply place value understanding to represent a quantity with written numerals and expressions.
- Count a group of up to 120 objects.

In this section, students use their understanding of place value to organize, count, and represent groups of up to 120 objects. They create multiple representations of two-digit numbers, demonstrating their understanding that the two digits represent amounts of tens and ones, and that the same two-digit number can be composed using different amounts of tens and ones. Students then use these insights to solve and write number riddles.

My number has 8 tens, is less than 100, and is the sum of 51 and 32.

PLC: Lesson 8, Activity 1, Represent Our Favorite Numbers

Throughout the Unit

Throughout the unit, What Do You Know About, How Many Do You See and Estimation Exploration warm-ups allow students to make sense of quantities and numbers. Number Talks and True and False warm-ups support students’ fluency within 10 and addition up to 100.

There are no new centers introduced in this unit. Students choose from centers that have been introduced throughout the year. Students can work at any previously introduced stages of the centers.
# Materials Needed

<table>
<thead>
<tr>
<th>LESSON</th>
<th>GATHER</th>
<th>COPY</th>
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<tbody>
<tr>
<td>A.1</td>
<td>• Colored pencils</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Index cards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Materials from previous centers</td>
<td></td>
</tr>
<tr>
<td>A.2</td>
<td>• Colored pencils</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Connecting cubes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Index cards</td>
<td></td>
</tr>
<tr>
<td>A.3</td>
<td>• Connecting cubes in towers of 10 and singles</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Number cards 0–10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tools for creating a visual display</td>
<td></td>
</tr>
<tr>
<td>B.4</td>
<td>• Connecting cubes in towers of 10 and singles</td>
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</tr>
<tr>
<td>B.5</td>
<td>• Connecting cubes in towers of 10 and singles</td>
<td>• none</td>
</tr>
<tr>
<td>B.6</td>
<td>• Connecting cubes in towers of 10 and singles</td>
<td>• none</td>
</tr>
<tr>
<td>C.7</td>
<td>• Collections of objects</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Cups</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Double 10-frames</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Paper plates</td>
<td></td>
</tr>
<tr>
<td>C.8</td>
<td>• Connecting cubes in towers of 10 and singles</td>
<td>• none</td>
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<tr>
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<td>• Materials from a previous activity</td>
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</tr>
<tr>
<td></td>
<td>• Materials from previous centers</td>
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</tr>
<tr>
<td></td>
<td>• Paper</td>
<td></td>
</tr>
<tr>
<td>C.9</td>
<td>• Bags or envelopes</td>
<td>• Number Riddle Cards (groups of 20)</td>
</tr>
<tr>
<td></td>
<td>• Connecting cubes in towers of 10 and singles</td>
<td></td>
</tr>
</tbody>
</table>
C.10
- Bags or envelopes
- Connecting cubes in towers of 10 and singles
- Index cards
- Materials from a previous activity

none
Section A: Add and Subtract Within 20

Lesson 1: Addition Fluency Within 10

Standards Alignments
Addressing 1.OA.C.6

Teacher-facing Learning Goals
- Develop fluency with sums within 10.

Student-facing Learning Goals
- Let’s add within 10.

Lesson Purpose
The purpose of this lesson is for students to develop fluency with sums within 10.

The standards call for students to demonstrate fluency with addition and subtraction within 10 by the end of grade 1. The purpose of this lesson is for students to identify any sums they are not yet fluent with, and spend time working on activities that will help them build fluency. The phrase “from memory” is used in the lesson activities as a way to help students distinguish between sums that they can recall very quickly and those that take them more time to find. For the purposes of this section, it is not important for students to accurately distinguish between sums they recall from memory and those they find with fluency using a strategy. It is important that students identify the sums that take them longer to find and to develop strategies for finding the value of these sums with increased fluency.

If students need additional support with the concepts in this lesson, refer back to Unit 3, Section A in the curriculum materials.

Access for:

Students with Disabilities
- Action and Expression (Activity 1)

English Learners
- MLR8 (Activity 2)

Instructional Routines
How Many Do You See? (Warm-up)

Materials to Gather
- Colored pencils: Activity 1
• Index cards: Activity 1
• Materials from previous centers: Activity 2

### Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 1</td>
<td>15 min</td>
</tr>
<tr>
<td>Activity 2</td>
<td>25 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
</tbody>
</table>

### Teacher Reflection Question

Which sums are students still working to learn? How might you work in practice with these sums at other times during the school day?

---

**Cool-down** (to be completed at the end of the lesson) 0 min

Unit 8, Section A Checkpoint

**Standards Alignments**

Addressing 1.OA.C.6

**Student-facing Task Statement**

Lesson observations

**Student Responses**

- Add fluently within 10.

---

**Begin Lesson**

**Warm-up** 10 min

How Many Do You See: Within 10

**Standards Alignments**

Addressing 1.OA.C.6
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. The images encourage students to use addition or subtraction within 10. Students may add the red and yellow counters or use the structure of the 10-frame and subtract the number of empty spaces from 10.

### Instructional Routines

**How Many Do You See?**

#### Student-facing Task Statement

How many do you see?

How do you see them?

#### Launch

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

#### Activity

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

#### Synthesis

- “How can the 10-frame help you know the sum of two numbers?” (When I look at a 10-frame I can tell how many are there without counting. When I see two numbers in the 10-frame, I can tell what the sum is by looking at how many empty spaces there are and subtracting from 10.)

### Activity 1

**Sums I’ve Got**

- 10: I see 5 on top and 5 on the bottom and $5 + 5 = 10$.
- 9: I see 1 empty space and 1 less than 10 is 9.
- 8: You need 2 more to make 10 so it must be 8.
Standards Alignments
Addressing 1.OA.C.6

The purpose of this activity is for students to identify the sums within 10 that they do not yet know from memory. Students write these sums on index cards which can then be used as flash cards in order to help students practice fluency throughout the unit.

Access for Students with Disabilities

Action and Expression: Internalize Executive Functions. As students skip around on the chart, invite them to use a second colored pencil to color in the sums they do not yet know from memory.

Supports accessibility for: Memory, Organization

Materials to Gather

Colored pencils, Index cards

Student-facing Task Statement

Color the sums you know the value of from memory.

Write each sum that is not colored, on an index card.

Use the cards to practice these sums.

Student Responses

Students create a card for each sums they are not yet fluent with.

Launch

• Give students colored pencils and index cards.
• “Today we are going to revisit sums with values up to 10. We will identify the sums we know the value of from memory and the sums we are still working on.”
• Display addition chart.
• Demonstrate saying the value of some of the sums you know aloud, then quickly coloring in that box of the chart. Demonstrate skipping around on the chart, rather than moving down a row or column, to avoid using patterns to identify sums that students aren’t fluent with yet.
• “Look at each expression in the chart and color in all the sums you know from memory. When you are done, you will probably have some boxes that are not colored in. These are the sums you are still working on. Write each of these sums on a card. Then use the cards to practice these
Activity 2

Centers: Choice Time

Standards Alignments
Addressing 1.OA.C.6

The purpose of this activity is for students to choose from activities that focus on building fluency adding within 10. Students choose from previously introduced centers.

- Check It Off
- Number Puzzles
- Capture Squares
Access for English Learners

MLR8 Discussion Supports. Synthesis: Provide students with the opportunity to rehearse what they will say with a partner before they share with the whole class.

Advances: Speaking

Materials to Gather

Materials from previous centers

Required Preparation

- Gather materials from previous centers:
  - Check It Off, Stage 1
  - Number Puzzles, Stage 1
  - Capture Squares, Stage 1

Student-facing Task Statement

Choose a center.

Check it Off

Number Puzzles

14 = 8 + □

Capture Squares

Launch

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

Activity

- Invite students to work at the center of their choice.
- 10 minutes: center work time
- “Choose what you would like to do next.”
- 10 minutes: center work time

Synthesis

- “Is it more helpful to practice sums on your index cards, or to play games using addition within 10?” (Index cards because
you only focus on the ones you don’t know yet. Games because you get to practice lots of different facts and it is more fun.)

Lesson Synthesis

“Today we identified the sums within 10 we still need to work on in order to know them from memory. Why is it important to know the sums within 10 from memory?” (When we work with larger numbers we will need the sums within 10. So we don’t have to draw a picture or count to solve every problem.)
Lesson 2: Relate Addition and Subtraction

Standards Alignments
Addressing 1.OA.C.6, 1.OA.D.8

Teacher-facing Learning Goals
• Develop fluency with addition and subtraction within 10, using the relationship between addition and subtraction.

Student-facing Learning Goals
• Let's look at the relationship between addition and subtraction.

Lesson Purpose
The purpose of this lesson is for students to use the relationship between addition and subtraction to fluently add and subtract within 10.

Throughout the year students have been building fluency with addition and subtraction within 10. Students often find subtraction more difficult than addition because it does not relate to counting as clearly. The purpose of this lesson is to highlight and have students utilize the relationship between addition and subtraction (MP7) and for students to practice differences within 10 that they do not yet know with fluency.

If students need additional support with the concepts in this lesson, refer back to Unit 3, Section A in the curriculum materials.

Access for:

● Students with Disabilities
  • Representation (Activity 2)

● English Learners
  • MLR2 (Activity 1)

Instructional Routines
Number Talk (Warm-up)

Materials to Gather
• Colored pencils: Activity 3
• Connecting cubes: Activity 1
• Index cards: Activity 3
Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 1</td>
<td>15 min</td>
</tr>
<tr>
<td>Activity 2</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 3</td>
<td>10 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
<tr>
<td>Cool-down</td>
<td>5 min</td>
</tr>
</tbody>
</table>

Teacher Reflection Question

Students will continue to use the relationship between addition and subtraction to add and subtract in upcoming grades. In what ways did you see students use their understanding of the relationship between addition and subtraction during today's lesson? How can you continue to foster this understanding in upcoming lessons?

Cool-down (to be completed at the end of the lesson)

Use Related Facts

Standards Alignments

Addressing 1.OA.C.6

Student-facing Task Statement

Mai is still working on $9 - 6 = \square$.

Write an addition equation she can use to help figure out the difference.

Addition equation: ____________________________

Student Responses

- $6 + 3 = 9$, $3 + 6 = 9$, $9 = 3 + 6$, or $9 = 6 + 3$

Warm-up

Number Talk: Connect Addition and Subtraction
Standards Alignments
Addressing 1.OA.C.6

The purpose of this Number Talk is to elicit strategies and understandings students have for the relationship between addition and subtraction (MP7). These understandings help students develop fluency and will be helpful later in this lesson when students identify sums they know that can help them find the values of differences.

Instructional Routines
Number Talk

Student-facing Task Statement
Find the value of each expression mentally.

- 5 + 4
- 4 + 5
- 9 − 4
- 9 − 5

Student Responses
- 9: I know this sum from memory.
- 9: This is the same as the first one, just in a different order.
- 5: I know 5 and 4 make 9 so if you take 4 away you will have 5.
- 4: It is related to all the others.

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

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

Synthesis
Consider asking:
- “Who can restate _____ ’s reasoning in a different way?”
- “Did anyone have the same strategy but would explain it differently?”
- “Did anyone approach the problem in a different way?”
- “Does anyone want to add on to___’s strategy?"
Activity 1
Cube Tower Addition and Subtraction

Standards Alignments
Addressing 1.OA.C.6

The purpose of this activity is for students to build an understanding of the relationship between addition and subtraction (MP7). By using two different colored cubes, students can see the two parts that make the total. They can also see when one part is removed from the total, the other part remains. Students write addition and subtraction equations that can be represented with each cube tower.

Access for English Learners
MLR2 Collect and Display. Circulate, listen for and collect the language students use as they talk about the towers. On a visible display, record words and phrases such as: equation, addition, subtraction, add, subtract, tower, match. Invite students to borrow language from the display as needed, and update it throughout the lesson.
Advances: Conversing, Speaking

Materials to Gather
Connecting cubes

Required Preparation
• Create a tower of connecting cubes with 4 cubes of one color and 3 cubes of another color.

Student-facing Task Statement
Write an addition and a subtraction equation to match the connecting cubes.
1.
2.

Launch
• Groups of 2
• Display a tower of four cubes of one color and three cubes of another color.
• “What equations could you write to match this tower?”
• If needed, “What subtraction equation could you write to match this tower?”
• “You are going to look at some pictures of
Connecting cubes. Use what you know about addition and subtraction to write two equations for each tower.”

**Activity**
- 5 minutes: independent work time
- 3 minutes: partner work time
- Monitor for students who build the images with connecting cubes and demonstrate the addition and subtraction with the tower for the problem that shows 6 and 3.

**Synthesis**
- Invite previously identified students to share.
- “How are the addition and subtraction equations that match this cube tower the same? How are they different?” (They have the same total and the same parts. The addition equation shows that the two parts are put together to get the total. The subtraction equations start with the total and one part is taken away and the other part is left.)

---

### Activity 2

**Find the Unknown Number**

**Standards Alignments**

Addressing 1.OA.C.6, 1.OA.D.8

The purpose of this activity is for students to find the number that makes an addition or
subtraction equation true. The equations encourage students to use methods based on the relationship between addition and subtraction (MP7). For example, after finding the number that makes $4 + \underline{} = 9$, true, students can use this to find the number that makes $9 - \underline{} = 5$ true.

### Access for Students with Disabilities

*Representation: Access for Perception.* Provide access to connecting cubes. Ask students to identify correspondences between the equations and their concrete representation.

*Supports accessibility for: Conceptual Processing, Organization*

---

**Student-facing Task Statement**

Find the number that makes each equation true. Explain to your partner how you found it.

1. $4 + \underline{} = 9$
2. $9 - 5 = \underline{}$
3. $\underline{} + 5 = 8$
4. $8 - 3 = \underline{}$
5. $7 - 4 = \underline{}$
6. $8 = 2 + \underline{}$
7. $8 - \underline{} = 4$

**Student Responses**

1. 5. I counted on 5 numbers. 5, 6, 7, 8, 9
2. 4. If $4 + 5 = 9$, then $9 - 4 = 5$.
3. 3. I know $3 + 5 = 8$ because I thought of 5 fingers and 3 fingers.
4. 5. The parts of 8 are 3 and 5. So if you take

---

**Launch**

- Groups of 2

**Activity**

- Read the task statement.
- 5 minutes: partner work time
- Monitor for students who discuss using a known addition fact to find the unknown number in a subtraction equation.

**Synthesis**

- Invite previously identified students to share.
away from 8 and have 3 left, you took away 5.

5. I thought about $4 + \_ = 7$. I know $4 + 3 = 7$, so the missing number must be 3.

6. I just know $6 + 2 = 8$.

7. I know $4 + 4 = 8$ so $8 - \boxed{4} = 4$.

---

**Activity 3**

**Differences I’ve Got**

**Standards Alignments**

Addressing 1.OA.C.6

The purpose of this activity is for students to identify the differences within 10 they do not yet know from memory. Students write these differences on index cards which can be used for students to build fluency. It is not important for students to accurately distinguish between sums they recall from memory and those they find with fluency using a strategy. The focus of the lesson should be identifying the differences that take them longer to find and to develop strategies for finding the value of these differences with increased fluency. Students will continue to practice recalling sums and differences within 10 from memory in grade 2.

**Materials to Gather**

Colored pencils, Index cards

**Student-facing Task Statement**

Color the differences you know the value of from memory.

**Launch**

- Give students colored pencils and index cards.
- “Now we will revisit differences with values within 10. We will identify the differences we know the value of from memory and the ones we are still working on. Look at each expression in the chart and color in all that you know the value of from memory,
Write each difference that is not colored, on an index card.

Write an addition equation on the card that can help you find the value of the difference.

---

just like you did on the addition chart. When you are done, you will probably have some boxes that are not colored in. These are the differences you are still working on. Write each of these differences on a card. On the back of the card, write an addition equation that can help you find the difference. Then you can use the cards to practice.“

**Activity**

- 8 minutes: independent work time

**Synthesis**

- “Choose one difference you are still working on. Tell your partner the sum that can help you find the value of the difference.”

---

**Student Responses**

Students color in the differences they know the value of from memory and write the others on index cards.

---

**Lesson Synthesis**

“Today we identified the differences within 10 that we are still working on. We thought about using sums we know to help us find the value of differences. What sum would be helpful in finding the value of $7 - 3 = \square$? How would that sum be helpful?” ($3 + 4 = 7$ if you know you get 7 when you put together 3 and 4, then you know if you start with 7 and take away 3 you will have 4 left.)

---

Complete Cool-Down
Response to Student Thinking

Students do not write a related addition equation.

The work in this lesson builds from the addition and subtraction concepts developed in a prior unit.

Next Day Support

- Before the first activity, pair students up to discuss their responses.

Prior Unit Support

Grade 1, Unit 3, Section A: Develop Fluency with Addition and Subtraction within 10
Lesson 3: Add and Subtract Within 20

Standards Alignments
Addressing 1.OA.C.6, 1.OA.D.8

Teacher-facing Learning Goals
• Add and subtract within 20.

Student-facing Learning Goals
• Let’s add and subtract within 20.

Lesson Purpose
The purpose of this lesson is for students to add and subtract within 20.

In previous lessons, students practiced adding and subtracting within 10. In this lesson, students use the methods that make the most sense to them to add and subtract within 20. The lesson activities encourage students to use methods such as using known facts, making 10 to add, decomposing a number to lead to a 10 to subtract, and using the relationship between addition and subtraction. This lesson helps students practice adding and subtracting with 20 and apply their fluency within 10 in preparation for their work with addition and subtraction in grade 2.

If students need additional support with the concepts in this lesson, refer back to Unit 3, Sections C and D in the curriculum materials.

Access for:

👩‍🏫 Students with Disabilities
• Engagement (Activity 2)

🌐 English Learners
• MLR8 (Activity 2)

Instructional Routines
MLR7 Compare and Connect (Activity 1), Number Talk (Warm-up)

Materials to Gather
• Connecting cubes in towers of 10 and singles: Activity 1, Activity 2
• Number cards 0–10: Activity 2
• Tools for creating a visual display: Activity 1
Lesson Timeline

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<td>20 min</td>
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<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
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</table>

**Teacher Reflection Question**

Reflect on your experience with the Number Talks in the curriculum. What moves or questions have improved the learning for each of your students during this routine? What improvements would you make next year to help all students develop fluency throughout the year?

---

**Cool-down** (to be completed at the end of the lesson)

Unit 8, Section A Checkpoint

**Standards Alignments**

Addressing 1.OA.C.6

**Student-facing Task Statement**

Lesson observations

**Student Responses**

- Add fluently within 10.
- Subtract fluently within 10.
- Use the relationship between addition and subtraction.
- Make 10 when adding or subtracting within 20.

---

**Begin Lesson**

**Warm-up**

Number Talk: Use Known Sums

**Standards Alignments**

Addressing 1.OA.C.6
The purpose of this Number Talk is to encourage students to think about using known sums to create easier calculations and to rely on the properties of operations or the relationship between addition and subtraction to mentally solve problems. The methods elicited here will be helpful as students add and subtract within 20.

**Instructional Routines**

**Number Talk**

**Student-facing Task Statement**

Find the value of each expression mentally.

- 6 + 7
- 13 – 7
- 7 + 8
- 15 – 7

**Student Responses**

- 13: 6 + 6 = 12, 12 + 1 = 13
- 6: 6 + 7 = 13 so 13 – 7 = 6
- 15: 7 + 3 + 5 = 15
- 8: Since 7 + 8 = 15 then 15 – 7 = 8

**Launch**

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

**Activity**

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

**Synthesis**

- “Some of us used 7 + 8 to help with 15 – 7. What other subtraction expression does 7 + 8 help with?" (15 – 8. It’s like the other subtraction equation, you just have to find a different unknown addend.)

---

**Activity 1**

Many Ways to Add and Subtract

**Standards Alignments**

Addressing 1.OA.C.6

20 min  PLC Activity
The purpose of this activity is for students to add and subtract within 20. Students are encouraged to find sums and differences in as many different ways as they can. They record their thinking and then do a gallery walk to look at their classmates' work. Set-up for the gallery walk by putting all the posters for a specific expression together. The synthesis focuses on how decomposing a number to lead to a ten can be a helpful method when subtracting within 20 (MP7).

This activity uses MLR7 Compare and Connect. Advances: representing, conversing.

Instructional Routines

MLR7 Compare and Connect

Materials to Gather

Connecting cubes in towers of 10 and singles,
Tools for creating a visual display

Student-facing Task Statement

Circle 1 addition expression and 1 subtraction expression.

5 + 9  
4 + 7  
6 + 4 + 4  

14 – 8  
15 – 9  
13 – 6

Find the value of the expressions in as many different ways as you can.

Show your thinking using drawings, number, or words.

Student Responses

Students record their methods for solving an addition and subtraction problem in as many different ways as they can.

Launch

• Groups of 2
• Give each group tools for creating a visual display and access to connecting cubes in towers of 10 and singles.

Activity

MLR7 Compare and Connect

• Read the task statement.
• “Create a visual display that shows your thinking about each expression. You may want to include details such as drawings, numbers, words, or equations to help others understand your thinking.”
• 7 minutes: partner work time
• “Now we will do a gallery walk so you can look at your classmates' work. Look for ways that their work is the same and different.”
• 7 minutes: gallery walk
Synthesis

- “What is the same and what is different about how you and your classmates added or subtracted?” (Some of us wrote equations. Some of us made 10 for the addition and subtraction expressions.)

- Display $13 - 6 = \underline{13} - 3 - 3, 10 - 3 = 7$.

- “How did this student find the difference between 13 and 6?” (They broke 6 into 3 and 3. They took 3 from 13 to get to 10 and then took the other 3 away.)

- “Why is it helpful to look for ways to get to a 10 when subtracting?” (Once you are at 10 it is easy to subtract another number because we know our ten facts.)

Activity 2

Heads Up

Standards Alignments

Addressing 1.OA.C.6, 1.OA.D.8

The purpose of this activity is for students to practice adding and subtracting within 20. Students add to find the sum of two numbers, and either add or subtract to find the unknown addend when one addend and the sum are given.
**Access for English Learners**

*MLR8 Discussion Supports.* Synthesis: Invite students to take turns sharing which equation they would choose and why. Ask students to restate what they heard using precise mathematical language and their own words. Display the sentence frame: “I heard you say . . . .” Original speakers can agree or clarify for their partner.

*Advances: Listening, Speaking*

**Access for Students with Disabilities**

*Engagement: Develop Effort and Persistence:* Differentiate the degree of difficulty or complexity. Begin by giving students a subset of the number cards with more accessible values and then introduce the remaining cards once students have written equations for the first subset of cards.

*Supports accessibility for: Attention, Conceptual Processing*

**Materials to Gather**

Connecting cubes in towers of 10 and singles,
Number cards 0–10

**Student-facing Task Statement**

Write an equation for each round you play.

Round 1: ________________________________
Round 2: ________________________________
Round 3: ________________________________
Round 4: ________________________________
Round 5: ________________________________
Round 6: ________________________________

**Student Responses**

Sample responses:

- $8 + 5 = 13$, $13 - 8 = 5$
- $14 - 5 = 9$, $5 + 9 = 14$

**Launch**

- Groups of 3
- Give students number cards and access to connecting cubes in towers of 10 and singles.
- “We are going to play a game called Heads Up. This game is played with three students.”
- Demonstrate with two students. Ask each student to choose a card without looking at it and hold it up to their foreheads.
- “My partners have each chosen a card. My job is to find the sum and tell my group. Then, each of my partners use the other player’s number and the sum to determine what number is on their head. Then we all write the equation that represents what we did.”
- Demonstrate writing an equation to show how you found the sum of the two
numbers.

- Ask students how they would find the number on each player’s head and record the equations.
- “After each round switch roles and play again.”

Activity

- 15 minutes: small-group work time

Synthesis

- “During one round of Heads Up, Diego’s partner had a 3 on their card. Diego was told that the sum of their numbers was 12. What equations can Diego use to figure out what number is on his card?”
  \[(12 - 3 = \underline{\text{____}} \text{ or } 3 + \underline{\text{____}} = 12)\]
- “Explain which of these equations you would use to find the unknown number.” (I would use \[12 - 3\] because it is really easy to count back 3. I would choose \[3 + \underline{\text{____}} = 12\] because I prefer adding. I would add 7 to get to 10 and then 2 more.)

Advancing Student Thinking

If students only write equations using one operation when it is their turn to find an unknown addend, (for example, they only write subtraction equations), consider asking:

- “What is another equation you could use to figure out what number is on your head?”
- “What is a way you could use subtraction (or addition) to find the number that is on your head?”
- “Which way is easier for you to think about figuring out the number on your head? Why?”

Lesson Synthesis

“How does knowing addition and subtraction facts within 10 help you add and subtract within 20?” (I know all the different ways to make ten, so I can look for ways to get to a ten when I add or subtract. It
helps me think of ways to make easier sums or differences. I can decompose one number and add or subtract in parts.)
Section B: Story Problems

Lesson 4: Change Unknown Story Problems

Standards Alignments
Addressing 1.OA.A.1, 1.OA.C.6

Teacher-facing Learning Goals
- Solve Add To and Take From, Change Unknown story problems in a way that makes sense to them.

Student-facing Learning Goals
Let’s solve story problems.

Lesson Purpose
The purpose of this lesson is for students to solve Add To and Take From, Change Unknown story problems.

In a previous unit, students were introduced to Add To and Take From, Change Unknown story problems and solved these problems in any way that made sense to them. This lesson offers more practice making sense of and solving these types of problems. Students share different methods used and discuss how either addition or subtraction can be used to solve these problems. These discussions help students develop their understanding of how to make sense of and solve these problem types and reinforce their methods for adding and subtracting within 20.

If students need additional support with the concepts in this lesson, refer back to Unit 2, Section A in the curriculum materials.

Access for:

- Students with Disabilities
  - Representation (Activity 1)

- English Learners
  - MLR8 (Activity 2)

Instructional Routines
How Many Do You See? (Warm-up)
Materials to Gather

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

Lesson Timeline

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<th>Activity</th>
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<tr>
<td>Cool-down</td>
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</table>

Teacher Reflection Question

Think about times when students were able to make connections to and build on the ideas of their peers during discussions today. What norms or routines allowed students to engage with other students’ ideas?

Cool-down (to be completed at the end of the lesson)

Clare Counts Sharks

Standards Alignments

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

Student-facing Task Statement

Clare counted 8 sharks swimming in a tank. Then some more sharks swam by. Clare counted 13 sharks all together. How many more sharks swam by? Show your thinking using drawings, numbers, or words.

Student Responses

5. Sample response: $8 + 2 + 3 = 13$, $2 + 3 = 5$
Warm-up
How Many Do You See: Numbers to 20

Standards Alignments
Addressing 1.OA.C.6

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.

Instructional Routines
How Many Do You See?

Student-facing Task Statement
How many do you see? How do you see them?

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

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

Synthesis
- “What equations could we write to represent the last image?” (10 + 7 = 17, 8 + 2 + 7 = 17, 10 + 5 + 2 = 17)
Student Responses

- 15: I see 10 and 5 so it is 15.
- 13: I see 2 less than the first one. $15 - 2 = 13$
- 17: I see 10, 5, and 2.

Activity 1
Field Trip to the Aquarium

Standards Alignments
Addressing 1.OA.A.1, 1.OA.C.6

The purpose of this activity is for students to make sense of and solve Add To and Take From, Change Unknown story problems in a way that makes sense to them. Students represent the method they used and different methods are discussed during the synthesis. When students connect the quantities and action in each story problem to an equation and then solve the problem, they reason abstractly and quantitatively (MP2).

The teacher may want to incorporate movement into this activity by writing each problem on a piece of chart paper and placing each one in a different location around the classroom. Students can solve the problem at one location, discuss the problem with their partner, then move on to a new problem at a new location.

Access for Students with Disabilities

*Access for Perception.* Provide appropriate reading accommodations and supports to ensure student access to word problems and other text-based content.

Supports accessibility for: Language, Visual-Spatial Processing, Attention
Materials to Gather
Connecting cubes in towers of 10 and singles

Student-facing Task Statement
Solve each problem.
Show your thinking using drawings, numbers, or words.

1. Clare saw 8 sea turtles swimming together in the tank.
   Some more turtles joined them.
   Now there are 15 turtles in the tank.
   How many turtles joined the group?

2. There were 17 penguins sitting on the rocks.
   Some of the penguins went back into the water.
   Now there are 5 penguins sitting on the rocks.
   How many penguins went back into the water?

3. The seal trainer brought out a bucket of 20 fish to feed to the seals.
   The seals ate some of the fish.
   Now there are 3 fish left in the bucket.
   How many fish did the seals eat?

4. In the touch pools, Tyler felt 6 stingrays.
   Then he felt some sea stars.
   Tyler felt 14 animals all together.
   How many sea stars did Tyler feel?

Student Responses
1. 7. Sample responses: Students draw 8 shapes to represent 8 turtles. Students draw more shapes until they have 15 total shapes. Labels on the drawing show that 7 turtles joined the group.

Launch
- Groups of 2
- Give each group access to connecting cubes in towers of 10 and singles.
- “Have you ever been to an aquarium? What do you see when you visit an aquarium?” (fish, sharks, dolphins, stingrays, birds, snakes)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.

Activity
- “We are going to solve some story problems about what Clare saw on her field trip to the aquarium.”
- 8 minutes: independent work time
- 4 minutes: partner discussion
- Monitor for students who represent and solve the problem about the penguins in different ways, such as:
  - Represent the problem as
    - $17 - \square = 5$
  - Represent the problem as
    - $5 + \square = 17$
  - Count back from 17 to 5
  - Add or count on from 5 to 17
  - Subtract $17 - 5$

Synthesis
- Invite previously identified students to share.
- “How does $17 - 5$ help us find the number
8 + □ = 15, I know that 8 + 7 = 15

2. 12. Sample responses: Student draws 17 shapes to represent the penguins. Student crosses out shapes until only 5 are left. Labels on the drawing show that 12 penguins went back in the water. 
   \[17 - 5 = 12\]

3. 17. Sample responses: 
   \[20 - □ = 3, 20 - 10 = 10, 10 - 7 = 3\] or 
   \[3 + □ = 20, 3 + 7 = 10, 10 + 10 = 20\]

4. 8. Sample response: \[6 + □ = 14, 6 + 4 + 4 = 14, 4 + 4 = 8\]

of penguins that went back into the water?" (If you start with all the penguins and take away the 5 that are still sitting on the rock, you will find out how many went back into the water.)

Activity 2

Find the Unknown Number

Standards Alignments

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

The purpose of this activity is for students to consider different ways to solve for the unknown in a Take From, Change Unknown problem. Students are presented with an equation that represents the order of the actions in the story. However, students often find that this equation is less intuitive to find the unknown value than an addition equation with an unknown addend. Students may also share the ways they use known sums and differences and how they think of making a 10 to find the unknown number.

In this activity, students show their understanding of the relationship between the quantities in the problem and their understanding of the relationship between addition and subtraction to share ways to solve the problem (MP2, MP7).

Access for English Learners

MLR8 Discussion Supports. Synthesis: Provide students with the opportunity to rehearse what they will say with a partner before they share with the whole class.

Advances: Speaking
Materials to Gather

Connecting cubes in towers of 10 and singles

Student-facing Task Statement

Clare watched 16 bullfrogs at the aquarium. Then some of them swam away. Now Clare can only see 9 bullfrogs. How many bullfrogs swam away?

Andre wrote $16 - \square = 9$, but he doesn’t know how to find the unknown number.

Show Andre how you would find the unknown number. Show your thinking using drawings, numbers, or words.

Student Responses

Sample responses:

- You could draw 16 circles to be the bullfrogs. Then circle the 9 bullfrogs Clare can see. Count the other circles, those are the bullfrogs that swam away.
- I would subtract 9 from 16 to find the number of frogs that swam away. $16 - 9 = 7$.
- You could start with 9 and think about how much to add to get to 16, like $9 + \square = 16$. $9 + 7 = 16$.

Launch

- Groups of 2
- Give each group access to connecting cubes in towers of 10 and singles.

Activity

- Read the task statement.
- 5 minutes: independent work time
- 3 minutes: partner discussion
- Monitor for students who:
  - use the relationship between addition and subtraction to add.
  - make 10 when adding on from 9 ($9 + 1 + 6 = 16$).
  - use the relationship between the numbers of frogs to explain why they can use $16 - 9 = 7$ to find the unknown number.

Synthesis

- Invite previously identified students to share.
- “How do you decide if you are going to add or subtract to find the unknown number in an equation?” (I usually subtract because I know what number to subtract, but I don’t know what numbers to add. I always add because I like it better. I saw there was a 9, so I just thought about adding because I know I can make a ten and add some more.)

Lesson Synthesis 10 min
Display one of the story problems from the lesson.

“Today we solved story problems where we knew how many of something there was at the beginning and at the end, but we didn’t know how much it changed in the middle of the story. We looked at addition and subtraction methods that can be used to make sense of and solve these problems. Explain to your partner why it works to use addition or subtraction to solve these problems.” (You can use addition to add on to one number until you get to the total. The number you added on is the unknown number. You can use subtraction to start with the total and take away the other number you know. The number you have left is the unknown number.)

Response to Student Thinking

Students write a number other than 5 for the number of sharks.

Next Day Support

- Before the next day’s warm-up, pair students up to discuss their responses.

Prior Unit Support

Grade 1, Unit 2, Section A: Add To and Take From Story Problems
Lesson 5: Put Together and Take Apart Story Problems

Standards Alignments
Addressing 1.NBT.C.4, 1.OA.A.1, 1.OA.C.6, 1.OA.D.7

Teacher-facing Learning Goals
- Solve Put Together/Take Apart, Addend Unknown story problems in a way that makes sense to them.

Student-facing Learning Goals
Let's solve more story problems.

Lesson Purpose
The purpose of this lesson is for students to solve Put Together/Take Apart, Addend Unknown story problems.

Students were introduced to, and practiced solving these story problem types in previous units. This lesson provides more practice for students to make sense of and solve these story problems in their own way. As these problems rely on making sense of part-part-whole relationships (MP1), students use the relationship between addition and subtraction (MP7) to solve problems and make sense of their peers’ solution methods (MP3).

If students need additional support with the concepts in this lesson, refer back to Unit 2, Section B in the curriculum materials.

Access for:

Students with Disabilities
- Engagement (Activity 1)

English Learners
- MLR8 (Activity 2)

Instructional Routines
True or False (Warm-up)

Materials to Gather
- Connecting cubes in towers of 10 and singles: Activity 1, Activity 2
Lesson Timeline

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Teacher Reflection Question

What aspects of today’s lesson allowed each of your students to see themselves as productive mathematical reasoners?

Cool-down (to be completed at the end of the lesson)

Shooting Stars

Standards Alignments

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

Student-facing Task Statement

Han saw 4 shooting stars.
Lin also saw some shooting stars.
Together they saw 12 shooting stars.
How many shooting stars did Lin see?
Show your thinking using drawings, numbers, or words.

Student Responses

8. Sample response: $4 + 6 = 10$, $10 + 2 = 12$, $6 + 2 = 8$

Warm-up

True or False: More or Less
Standards Alignments
Addressing 1.NBT.C.4, 1.OA.D.7

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 (MP7). Students may use these understandings to reason about whether each equation is true or false without finding the value of the expressions.

Instructional Routines

True or False

Student-facing Task Statement
Decide if each statement is true or false. Be prepared to explain your reasoning.

- $57 + 20 = 59$
- $66 - 4 = 62$
- $17 + 76 = 59$

Student Responses
- False: 59 is 2 more than 57, not 20 more.
- True: $6 - 4 = 2$ so $66 - 4 = 62$.
- False: The sum can’t be less than 76.

Launch
- Display one statement.
- “Give me a signal when you know whether the statement is true and can explain how you know.”
- 1 minute: quiet think time

Activity
- Share and record answers and strategies.
- Repeat with each statement.

Synthesis
- “How can you explain your answer without finding the value of the expression?”

Activity 1
At the Planetarium

Standards Alignments
Addressing 1.OA.A.1, 1.OA.C.6
The purpose of this activity is for students to make sense of and solve Put Together/Take Apart, Addend Unknown story problems (MP2). In the synthesis, students discuss different methods used to solve these problems, including using addition and subtraction.

The teacher may want to incorporate movement into this activity by writing each problem on a piece of chart paper and placing each one in a different location around the classroom. Students can solve the problem at one location, discuss the problem with their partner, then move on to a new problem at a new location.

### Access for Students with Disabilities

*Engagement: Provide Access by Recruiting Interest.* Provide choice. Invite students to decide which problem to start with.

*Supports accessibility for: Attention, Social-Emotional Functioning*

### Materials to Gather

Connecting cubes in towers of 10 and singles

### Student-facing Task Statement

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

1. There are 7 first graders and some second graders at the planetarium.
   There are 18 students at the planetarium.
   How many second graders are at the planetarium?

2. When the show started, 18 stars lit up in the sky.
   13 stars were bright.
   Some of the stars were dim.
   How many stars were dim?

3. Together, Diego and Tyler saw 15 shooting stars during the show.

### Launch

- Groups of 2
- Give each group access to connecting cubes in towers of 10 and singles.
- Display the image in the student book.
- “What do you notice in this picture? What do you wonder?” (There are bright colors. This looks like stars in the sky. Why is there red in the sky? Where is this?)
- “This is a picture of something called the Helix Nebula. It is one of many interesting things that can be seen in our sky. People who are interested in learning more about stars, planets, or anything else that is found in the sky, can visit a planetarium to learn all about these things. We are going to solve some problems about a field trip to the planetarium.”

### Activity

- 8 minutes: independent work time
Diego saw 6 shooting stars. Tyler saw the rest. How many shooting stars did Tyler see?

4. In the gift shop, Elena bought 12 star stickers. She also bought some planet stickers. Elena bought 20 stickers. How many planet stickers did she buy?

**Student Responses**

1. 11. Sample responses:
   - Students draw 7 shapes, then draw more shapes until there are 18 total shapes. Labels show 7 first graders and 11 second graders.
   - \(7 + \square = 18, \quad \square + 10 + 1 = 18\)
   - \(18 - 7 = 11\)

2. 5. Sample responses:
   - I counted on from 13. 14, 15, 16, 17, 18. \(13 + 5 = 18\)
   - \(13 + \square = 18, \quad \square + 5 = 18\)

3. 9. Sample response: \(15 - 5 - 1 = 9\)

4. 8. Sample response: 2 and 8 make 10 so 12 and 8 make 20.

**Advancing Student Thinking**

If students attempt to solve each problem by adding the known quantities, consider asking:

- “What is the story problem about? What do you know? What do you need to figure out?”
- “What did you do to solve the problem?”
- “What does your answer mean in the story? Does it make sense?”

**Synthesis**

- 4 minutes: partner discussion
- Monitor for students who solve the problem about bright and dim stars with addition and for students who solve the same problem with subtraction.

- Display \(15 - 6 = \square\) and \(6 + \square = 15\)
- “How do both of these equations help you find the number of shooting stars Tyler saw?”
- Invite previously identified students to share. As needed, ask students to connect the numbers they use to the story problem.
- “How are these methods the same? How are they different?” (They both find the same number of dim stars. Both show that there’s some bright stars, some dim stars, and a total number. One way uses addition to count on from the number of bright stars. One uses subtraction to take away the number of bright stars from the total.)
Activity 2

Which Equations Match?

Standards Alignments
Addressing 1.OA.A.1, 1.OA.C.6

The purpose of this activity is for students to identify different equations that can be used to represent the same problem. Students explain why each equation does or does not represent the story. This helps students understand that Put Together/Take Apart story problems can be represented and solved with either addition or subtraction when an addend is unknown (MP2).

Access for English Learners

MLR8 Discussion Supports. 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. Advances: Listening, Speaking

Materials to Gather

Connecting cubes in towers of 10 and singles

Student-facing Task Statement

Circle 2 equations that can be used to solve each problem. Be ready to explain how the equations represent the story and why the other equation doesn’t.

1. Noah painted 9 white stars. He also painted some yellow stars. Noah painted 17 stars all together. How many yellow stars did Noah paint?

   A. 17 – 9 = 
   B. 9 + 17 = 
   C. 9 + = 17

Launch

• Groups of 2
• Give each group access to connecting cubes in towers of 10 and singles.

Activity

• Read the task statement.
• 10 minutes: partner work time

Synthesis

• For each problem:
  ○ Invite students to share how each equation they chose represents the problem.
2. Kiran saw 16 objects in the sky.  
   11 of the objects were stars. 
   The rest of the objects were planets. 
   How many of the objects were planets? 

   A. $16 + 11 = \underline{\hspace{2cm}}$
   
   B. $11 + \underline{\hspace{2cm}} = 16$
   
   C. $16 - 11 = \underline{\hspace{2cm}}$

If you have time: Solve each problem using both equations.

**Student Responses**

1. $17 - 9 = \underline{\hspace{2cm}}$ and $9 + \underline{\hspace{2cm}} = 17$
2. $11 + \underline{\hspace{2cm}} = 16$ and $16 - 11 = \underline{\hspace{2cm}}$

**Lesson Synthesis**

“Today we solved story problems where there was a total number of objects and two different parts. We knew the total number and the number of one of the parts. We used addition and subtraction to represent the problem and find the unknown number.”

“Why can you use either addition or subtraction to find the unknown number?” (You can use addition because you know one part, so you can think of what to add to get to the total. It’s like when we use addition to find the answer to subtraction. You can use subtraction because if you take away the number of one of the parts, the unknown number is what is left.)

“When we matched equations to the story problems, what did you notice about the equations that did not match? Can you add the numbers in the problem anyway you want?” (You can't just add the numbers in the problem. You have to make sure they match what the story is about.)
Response to Student Thinking

Students write a number other than 8 for the missing number.

Next Day Support

- Before the first activity, pair students up to discuss their responses.

Prior Unit Support

Grade 1, Unit 2, Section B: Put Together/Take Apart Story Problems
Lesson 6: Compare Story Problems

Standards Alignments
Addressing 1.OA.A.1, 1.OA.A.2, 1.OA.C.6

Teacher-facing Learning Goals
- Solve Compare, Difference Unknown story problems in a way that makes sense to them.

Student-facing Learning Goals
- Let’s solve compare story problems.

Lesson Purpose

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

In this lesson, students practice solving Compare, Difference Unknown problems in which they are asked “how many more than” and “how many fewer than.” In the first activity, students solve problems in any way that makes sense to them. In the second activity, students are given information and asked to write questions that can be answered using the information. In both syntheses, students discuss how representing both quantities is helpful when solving Compare problems.

If students need additional support with the concepts in this lesson, refer back to Unit 2, Section C in the curriculum materials.

Access for:

- Students with Disabilities
  - Representation (Activity 1)
- English Learners
  - MLR2 (Activity 2)

Instructional Routines

Which One Doesn't Belong? (Warm-up)

Materials to Gather
- Connecting cubes in towers of 10 and singles: Activity 1, Activity 2
Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 1</td>
<td>20 min</td>
</tr>
<tr>
<td>Activity 2</td>
<td>20 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
</tbody>
</table>

Teacher Reflection Question

What was the best question you asked students today? Why would you consider it the best one based on what students said or did?

Cool-down (to be completed at the end of the lesson)

Unit 8, Section B Checkpoint

Standards Alignments

Addressing 1.OA.A.1

Student-facing Task Statement

Lesson observations

Student Responses

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

Warm-up

Which One Doesn't Belong: Equations
Standards Alignments

Addressing 1.OA.C.6

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 (MP7). In the synthesis, students compare an equation with addition and an equation with subtraction to focus student attention on comparing operations and reasoning about the relationship between addition and subtraction.

Instructional Routines

Which One Doesn't Belong?

Student-facing 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

- A doesn’t belong because it doesn’t have the value 11.
- B doesn’t belong because it doesn’t use addition.
- C doesn’t belong because 11 is not written with just two numbers.
- D does not belong because the biggest number isn’t first. It does not belong because it does not have the digit 6.

Launch

- Groups of 2
- Display 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
- Share and record responses.

Synthesis

- Display equations B and C.
- “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 three numbers and there are only two in the first equation.)
Activity 1

The School Carnival

Standards Alignments
Addressing 1.OA.A.1, 1.OA.C.6

The purpose of this activity is for students to practice solving Compare, Difference Unknown story problems (MP2). In the synthesis, students revisit a representation of a Compare problem that was introduced in a previous unit. This representation lays the foundation for working with tape diagrams in grade 2.

The teacher may want to incorporate movement into this activity by writing each problem on a piece of chart paper and placing each one in a different location around the classroom. Students can solve the problem at one location, discuss the problem with their partner, then move on to a new problem at a new location.

Access for Students with Disabilities

Representation: Access for Perception. Provide appropriate reading accommodations and supports to ensure student access to word problems and other text-based content.
Supports accessibility for: Language, Visual-Spatial Processing, Attention

Materials to Gather
Connecting cubes in towers of 10 and singles

Student-facing Task Statement
Solve each problem.
Show your thinking using drawings, numbers, or words.

1. Lin has 7 tickets for rides.
   Mai has 12 tickets.
   How many more tickets does Mai have than Lin?

2. The cotton candy booth sold 17 bags of blue cotton candy.
   They sold 7 bags of pink cotton candy.

Launch
• Groups of 2
• Give each group access to connecting cubes in towers of 10 and singles.
• “Today we are going to solve some problems about a school carnival. What are some things you know about carnivals?” (There are rides. You can play games. There is lots of food.)
How many more bags of blue candy did they sell than pink candy?

3. Tyler is picking out a prize. There are 13 toys and 9 stuffed animals. How many fewer stuffed animals are there than toys?

4. The ferris wheel can hold 20 people. The swings can hold 14 people. How many fewer people can the swings hold than the ferris wheel?

Student Responses

1. 5. Sample response: I counted on, 8, 9, 10, 11, 12.
2. 10. Sample response: I know $7 + 10 = 17$
3. 4. Sample response: $13 - 3 = 10$, $10 - 6 = 4$
4. 6. Sample response: $14 + 6 = 20$

Activity

- Read the task statement.
- 8 minutes: independent work time
- 4 minutes: partner work time
- For the problem about prizes, monitor for students who:
  - use cubes or draw pictures to represent both quantities.
  - write equations with a symbol to represent the unknown.
  - write equations to show how they used addition or subtraction to find the difference.

Synthesis

- Invite previously identified students to share.
- “How do these representations match the story?”
- If needed, “Where do you see how many fewer stuffed animals there are than toys?”
- If needed, “What equations can we write to represent this problem?”

Advancing Student Thinking

If students add both quantities in the problems, consider asking:

- “What is the problem about? What do you know? What do you need to figure out?”
- “What did you do to solve the problem?”
- “What does your answer mean in the story? Does it make sense?”
- “How could you use the connecting cubes or a drawing to represent the problem?”
Activity 2
How Many Rides?

Standards Alignments
Addressing 1.OA.A.1, 1.OA.A.2, 1.OA.C.6

The purpose of this activity is for students to use given information to ask and answer different questions. Students may ask Put Together or Compare problems using the given information. A representation of the information is also provided. This representation is a precursor to the tape diagrams students will use to represent and solve Compare problems in grade 2.

When students recognize the mathematical features of things in the real world and ask questions that arise from a presented situation, they model with mathematics (MP4).

Access for English Learners
MLR2 Collect and Display. Circulate, listen for and collect the language students use as they create questions to match each task statement. On a visible display, record comparison words and phrases such as: more than, less than, how many fewer, and how many more. Invite students to borrow language from the display as needed, and update it throughout the lesson.
Advances: Conversing, Reading

Materials to Gather
Connecting cubes in towers of 10 and singles

Student-facing Task Statement
Write and answer 2 questions using the information.
Use the picture for the first one if it is helpful.

1. Diego went on 7 rides.
   Priya went on 11 rides.
   
   ![Diego 7 rides](image)
   ![Priya 11 rides](image)

2. Jada went on 3 rides.
   Kiran went on 6 rides.

Launch
- Groups of 2
- Give each group access to connecting cubes in towers or 10 and singles.

Activity
- Read the task statement.
- 15 minutes: partner work time
- Monitor for students who can explain how the representation helps them answer the question they asked.
Noah went on 9 rides.

**Student Responses**

1. Sample response: How many fewer rides did Diego go on than Priya? How many rides did they go on all together?
2. Sample responses: How many rides did they go on all together? How many more rides did Kiran go on than Jada?

**Synthesis**

- Display the representation in the student book.
- Invite previously identified students to share their question and how the representation helps them find the answer to the question.

**Lesson Synthesis**

Display:

Jada went on 9 rides.
Mai went on 6 rides.

“Today we asked and answered ‘how many more’ and ‘how many fewer’ questions. What questions can we ask about this information?” (How many more rides did Jada go on than Mai? How many fewer rides did Mai go on than Jada?)

Display equation:

\[6 + 3 = 9\]

“How does the equation show the relationship between the rides Jada and Mai went on?” (It shows that you have to add three more rides to Mai’s rides in order to get to the number of rides Jada went on.)
Section C: Numbers to 120

Lesson 7: Count Large Collections

Standards Alignments
Addressing 1.NBT.A.1, 1.NBT.B

Teacher-facing Learning Goals
● Count to 120, starting at a number other than 1.
● Organize, count, and represent a collection of up to 120 objects or images.

Student-facing Learning Goals
● Let’s organize, count, and represent large collections.

Lesson Purpose
The purpose of this lesson is for students to organize, count, and represent a collection of up to 120 objects or images using place value understanding.

In previous units, students counted a collection of up to 120 objects and wrote and read numbers in that range. Students recognized 10 tens as 100, but have not been introduced to the unit of a hundred.

In this lesson, students revisit counting large groups of objects or images and represent their count in different ways. With both objects and images, students consider how organizing into groups of ten is helpful.

If students need additional support with the concepts in this lesson, refer back to Unit 6, Section B in the curriculum materials.

Access for:

Students with Disabilities
● Representation (Activity 2)

English Learners
● MLR7 (Activity 3)

Instructional Routines
What Do You Know About ____? (Warm-up)
Materials to Gather

- Collections of objects: Activity 2
- Cups: Activity 2
- Double 10-frames: Activity 2
- Paper plates: Activity 2

Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 1</td>
<td>15 min</td>
</tr>
<tr>
<td>Activity 2</td>
<td>15 min</td>
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<tr>
<td>Activity 3</td>
<td>10 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
</tbody>
</table>

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?

Cool-down (to be completed at the end of the lesson)

Unit 8, Section C Checkpoint

Standards Alignments

Addressing 1.NBT.A.1

Student-facing Task Statement

Lesson observations

Student Responses

- Say the count sequence up to 120.
- Organize objects to make counting large groups of objects easier.
- Read and write numbers within 120.
- Represent numbers to show the base-ten structure.
- Represent the same number with different amounts of tens and ones.
Warm-up

What Do You Know About 103?

Standards Alignments
Addressing 1.NBT.A.1

The purpose of this What Do You Know About is to invite students to share what they know about 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.

Instructional Routines
What Do You Know About _____?

Student-facing Task Statement
What do you know about 103?

Student Responses
Sample responses:
- It’s 3 more than 100.
- It’s 1 more than 102.
- Draws 10 tens and 3 ones.

Launch
- Display the number.
- “What do you know about 103?”
- 1 minute: quiet think time

Activity
- Record responses.
- “How could we represent the number 103?”

Synthesis
- “What connections do you see between different representations?”

Activity 1
Last Number Wins
Standards Alignments
Addressing 1.NBT.A.1

The purpose of this activity is for students to count within 120 starting at a number other than 1. Students stand in a circle and are given a “start” and “stop” number. As they count around the circle, each student says one number until they reach the “stop” number. The student who says the last number wins the round.

Required Preparation
- Prepare a chart with these start and stop numbers:

<table>
<thead>
<tr>
<th>Start</th>
<th>Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>80</td>
</tr>
<tr>
<td>85</td>
<td>95</td>
</tr>
<tr>
<td>90</td>
<td>105</td>
</tr>
<tr>
<td>100</td>
<td>120</td>
</tr>
</tbody>
</table>

Launch
- Groups of 5
- Display chart with “start” and “stop” numbers.
- “Today we are playing a new game called Last Number Wins. In this game your group will count from the ‘start’ number to the ‘stop’ number. The person to say the last number wins. Let’s play one round together. Our ‘start’ number will be 1 and our ‘stop’ number will be 43.”
- Arrange students in a circle and explain that each student says one number. Count to 43. The person who says “43” wins.

Activity
- “When you play in your groups, use the ‘start’ and ‘stop’ numbers listed on the chart.”
- 8 minutes: group work time
Synthesis

- “Let’s play another round as a class.”
- Display the “start” number 100 and the “stop” number 120.
- “How did you know what number to say after 100?” (It’s one more than 100 so that is 101.)

Activity 2

Count and Represent

Standards Alignments
Addressing 1.NBT.A.1

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 counting more efficient and accurate (MP6, MP7). Students may represent their count with different representations that they have worked with, including base-ten drawings, words ( _____ tens _____ ones), numbers, expressions, and equations.

Access for Students with Disabilities

Representation: Internalize Comprehension. Synthesis: Record students’ methods for counting the collection of objects on a display and keep visible during the next activity.

Supports accessibility for: Visual-Spatial Processing, Memory

Materials to Gather

Collections of objects, Cups, Double 10-frames, Paper plates

Required Preparation

- Create collections of between 90 and 120 objects, such as connecting cubes, counters, centimeter cubes, paper clips, pattern blocks, or other objects, for each group of 2 students.
**Student-facing Task Statement**

How many objects are in your collection?

Represent how many in as many ways as you can.

**Student Responses**

Sample responses: 107, 100 + 7, 10 tens + 7 ones, 10 tens 7 ones, base-ten drawing of 10 tens and 7 ones.

**Launch**

- Groups of 2
- Give each group a collection of objects and access to double 10-frames, plates, and cups, or other tools that can be used to organize collections.
- “We have been practicing counting up to 120. Now we are going to count objects in a large collection. Work with your partner to decide how to organize, count, and represent your collection. You may decide to count the collection in different ways.”

**Activity**

- 10 minutes: partner work time
- Monitor for students who represent their collection in different ways, including:
  - drawing groups of ten objects and singles
  - making a base-ten drawing to show tens and ones
  - labeling their count to show counting all the tens, then the ones

**Synthesis**

- Display previously identified 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?” (One shows all of the objects and the other made a drawing of a ten instead of showing 10 objects.)

**Advancing Student Thinking**

If students count by ones, consider asking:
Activity 3

How Many Cats?

Standards Alignments
Addressing 1.NBT.A.1, 1.NBT.B

The purpose of this activity is to count an organized arrangement of images and write a number to represent the quantity. The arrangement is designed to encourage kids to count by 10 as each row, except the last, has ten cats. Students may determine the number of tens and ones (10 tens 8 ones is 108) or they 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).

Access for English Learners

MLR7 Compare and Connect. Synthesis: After all strategies have been presented, lead a discussion comparing, contrasting, and connecting the different approaches. Ask: “How are the strategies similar? How are the strategies different? What connections can you make between the strategies?”

Advances: Representing, Conversing

Student-facing Task Statement

How many cats are there?

Launch

- Groups of 2

Activity

- Read the task statement.
- 3 minutes: independent work time
- “Explain how you counted to your partner. If you got different answers, work together to figure out how many cats there are.”
There are ____________ cats.

Show your thinking using drawings, numbers, or words.

**Student Responses**

108. Sample responses:

- There are 10 in each row and 8 in the bottom row. That's 10 tens 8 ones.
- 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 101, 102, 103, 104, 105, 106, 107, 108.

**Lesson Synthesis**

“Today we counted objects and images. How is counting a collection the same as counting images on paper? How is it different?” (They are the same because you can organize both into groups. They are different because you can't move the images around into groups or piles however you want, but you can do that with real objects in a collection. With images, you can look for ways it may already be in groups or make your own by circling.)

“How did you use ten today to help you count? How was ten helpful?” (We organized our objects into groups of ten. Then we counted the tens. It helped us keep track when we had to count lots of things.)
Lesson 8: Show Me All the Ways

Standards Alignments
Addressing 1.NBT.A.1, 1.NBT.B, 1.OA.C.6

Teacher-facing Learning Goals

- Represent two-digit numbers in different ways.

Student-facing Learning Goals

- Let’s represent two-digit numbers in different ways.

Lesson Purpose

The purpose of this lesson is for students to represent two-digit numbers in different ways to demonstrate place value understanding.

Students represent a two-digit number in as many ways as they can. They are encouraged to think about representations of their number that have different amounts of tens. Then, they do a gallery walk to compare representations their classmates made.

If students need additional support with the concepts in this lesson, refer back to Unit 4, Section D in the curriculum materials.

Access for:

Students with Disabilities
- Action and Expression (Activity 1)

English Learners
- MLR7 (Activity 2)

Instructional Routines

Estimation Exploration (Warm-up)

Materials to Gather

- Connecting cubes in towers of 10 and singles: Activity 1
- Materials from a previous activity: Activity 2
- Materials from previous centers: Activity 3
- Paper: Activity 1
Lesson Timeline

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</tbody>
</table>

Teacher Reflection Question

In grade 2, students extend their understanding of place value to three-digit numbers and perform addition and subtraction within 1,000. How does the grade 1 work with place value prepare them for that future learning?

Cool-down (to be completed at the end of the lesson)

Unit 8, Section C Checkpoint

Standards Alignments
Addressing 1.NBT.B

Student-facing Task Statement
Lesson observations

Student Responses
- Represent numbers to show the base-ten structure.
- Represent the same number with different amounts of tens and ones.

Warm-up

Estimation Exploration: Tens and Ones

Standards Alignments
Addressing 1.NBT.A.1
The purpose of an Estimation Exploration is to practice the skill of estimating a reasonable answer based on experience and known information.

**Instructional Routines**

**Estimation Exploration**

**Student-facing Task Statement**

1. Record an estimate that is:

   - too low
   - about right
   - too high

   ![Image of a grid]

   "What is an estimate that's too high?" "Too low?" "About right?"

   1 minute: quiet think time

   Display the image.

   "What is an estimate that's too high?" "Too low?" "About right?"

   1 minute: quiet think time

   Activity

   "Discuss your thinking with your partner."

   1 minute: partner discussion

   Record responses.

   **Synthesis**

   - "Did anyone change their original ‘about right’ estimate? Why did you change it?"
   - "Let's look at our revised estimates. Why were these estimates more accurate the second time?"
Record an estimate that is:

<table>
<thead>
<tr>
<th>too low</th>
<th>about right</th>
<th>too high</th>
</tr>
</thead>
</table>

Student Responses

Sample responses:
1. ◦ Too low: 20–40
   ◦ About right: 60–90
   ◦ Too high: 150–200
2. ◦ Too low: 60–70
   ◦ About right: 80–100
   ◦ Too high: 120–200

Activity 1

Represent Our Favorite Numbers

Standards Alignments

Addressing 1.NBT.B
The purpose of this activity is for students to represent numbers within 100 using drawings, words, numbers, expressions, and equations. Students choose their favorite number and represent this number in different ways. In the next activity, students participate in a gallery walk to see their classmates' representations.

Access for Students with Disabilities

*Action and Expression: Internalize Executive Functions.* Invite students to plan a method, including the tools they will use, for representing their favorite number. If time allows, invite students to share their plan with a partner before they begin.

*Supports accessibility for: Conceptual Processing, Organization*

Materials to Gather

Connecting cubes in towers of 10 and singles, Paper

Student Responses

Students represent their number in different ways.

Launch

- Give each student a piece of blank paper and access to connecting cubes in towers of 10 and singles.
- “We are going to create a class book. First you will plan out your page. Pick your favorite number between 20 and 100. You will represent your number in as many different ways as you can. You need to include at least three expressions. Let’s make a page together.”
- Display the number 84.
- “What are some ways that I can represent this number?” (I can draw 8 tens and 4 ones, 7 tens and 14 ones, $80 + 4$, $10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 4$, $70 + 14$)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Record responses.
- If needed, ask:
  - “How can we represent 84 using only 6 tens?”
“What other addition expressions could we write?”

**Activity**

- “Now create your page for our book.”
- 5 minutes: independent work time

**Synthesis**

- “Talk to your partner about whether your page is easy to read and understand. You can revise your page based on your partner’s feedback.”

**Advancing Student Thinking**

If students have difficulty finding more than one expression to represent their number, consider asking:

- “How can you show the number using connecting cubes?”
- “Split the collection into two parts. How many are in this part? How many are in this part? What expression can you write?”

**Activity 2**

**Gallery Walk: Our Favorite Numbers**

**Standards Alignments**

Addressing 1.NBT.B

The purpose of this activity is for students to interpret representations of numbers up to 100. Students participate in a gallery walk and find representations that are the same and different than their own. If time permits, students can return to their own work and revise based on what they saw in their classmates’ work. As students look through each others’ work, they discuss how the representations are the same and different and can defend different points of view (MP3).
Access for English Learners

MLR7 Compare and Connect. Synthesis: After the Gallery Walk, lead a discussion comparing, contrasting, and connecting the different representations. To amplify student language and illustrate connections, follow along and point to the relevant parts of the displays as students speak.

Advances: Representing, Conversing

Materials to Gather

Materials from a previous activity

Required Preparation

• Display student work from the previous activity for the gallery walk.

Launch

• Groups of 2

Activity

• “Visit different pages and notice which representations are shown. Which are the same as the representations you used? Which are different?”
• 5 minutes: gallery walk

Synthesis

• “How are the representations of your number the same as your classmates? How are they different?” (We all wrote expressions. Some students made more drawings than I did. I didn't represent my number with all ones, but someone did that for their number.)
• “If you’d like, you can add to or revise the representations on your page.”
Activity 3

Centers: Choice Time

Standards Alignments
Addressing 1.NBT.A.1, 1.OA.C.6

The purpose of this activity is for students to choose from activities that offer practice adding and subtracting within 20 and writing numbers up to 120. Students choose from three previously introduced centers.

- Compare
- How Close?
- Write Numbers

Materials to Gather
Materials from previous centers

Required Preparation
Gather materials from:

- Compare, Stage 2
- How Close, Stages 1 and 2
- Write Numbers, Stages 1-3

Student-facing Task Statement
Choose a center.

Compare

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

Write Numbers

Activity

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

Synthesis

• “How was your center work helpful today?”

Lesson Synthesis

“Today we each made a page for our class number book. Look at your page. What new representations or ideas did you get from looking at other students’ work?” (I added the different ways to break apart my number using tens and ones. I saw different ways to use expressions and equations to represent a number.)
Lesson 9: Solve Number Riddles

Standards Alignments
Addressing 1.NBT.B, 1.NBT.B.3, 1.NBT.C

Teacher-facing Learning Goals
• Apply place value understanding to solve number riddles.

Student-facing Learning Goals
• Let’s solve number riddles.

Lesson Purpose
The purpose of this lesson is for students to use their understanding of place value to solve number riddles.

In this lesson, students use their understanding of place value to determine a secret number and justify why the number matches the clues. When students solve the riddles, they have opportunities to look for and make use of the base-ten structure of numbers (MP7). In the synthesis, students discuss and solve a number riddle.

If students need additional support with the concepts in this lesson, refer back to Unit 4, Section B in the curriculum materials.

Access for:

Students with Disabilities
• Representation (Activity 2)

English Learners
• MLR8 (Activity 2)

Instructional Routines
True or False (Warm-up)

Materials to Gather
• Bags or envelopes: Activity 2
• Connecting cubes in towers of 10 and singles: Activity 1, Activity 2

Materials to Copy
• Number Riddle Cards (groups of 20): Activity 2

Required Preparation
For the lesson synthesis, create a chart with clues. Leave a few lines in between each clue. Fold the
chart paper so that only the first clue is showing.
- My number has more than 6 tens.
- My number is less than 100.
- My number has 8 tens.
- My number is the sum of $51 + 32$.

### Lesson Timeline

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 1</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 2</td>
<td>25 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
<tr>
<td>Cool-down</td>
<td>5 min</td>
</tr>
</tbody>
</table>

### Teacher Reflection Question

As you finish up this unit, reflect on the norms and activities that have supported each student in learning math. List ways you have seen each student grow as a young mathematician throughout this work.

---

### Cool-down (to be completed at the end of the lesson)

Which Clues Fit?

#### Standards Alignments

Addressing 1.NBT.B, 1.NBT.C

#### Student-facing Task Statement

The secret number is 95.

Circle the 4 clues that describe the secret number.

1. My number has 9 tens.
2. My number is greater than 100.
3. My number is $90 + 5$.
4. My number has 9 ones.
5. My number is the sum of 7 tens and 25.
6. My number is greater than 75.

#### Student Responses

Circles 1, 3, 5, and 6.
Warm-up

True or False: Comparison Statements

Standards Alignments
Addressing 1.NBT.B.3

The purpose of this True or False is to elicit strategies and understandings students have for comparing two-digit numbers. These understandings will be helpful later when students will need to be able to determine numbers that are greater than or less than a given number.

Instructional Routines
True or False

Student-facing Task Statement

Decide if each statement is true or false.

Be prepared to explain your reasoning.

- $65 > 35$
- $65 = 75 - 10$
- $65 > 35 + 30$

Student Responses

Sample responses:

- True: 6 tens is greater than 3 tens.
- True: Both have 6 tens and 5 ones, so they are equal.
- False: $35 + 30$ is the same as 65 because they both have 6 tens and 5 ones.

Launch

- Display one statement.
- “Give me a signal when you know whether the statement is true and can explain how you know.”
- 1 minute: quiet think time

Activity

- Share and record answers and strategies.
- Repeat with each equation.

Synthesis

- “How can you explain your answers by describing the number of tens and ones on each side?”
Activity 1
A Number Riddle

Standards Alignments
Addressing 1.NBT.B, 1.NBT.C

The purpose of this activity is for students to use their understanding of place value to find a secret number in a number riddle. Initially, students are given clues that could have more than one secret number to encourage them to think about all the possibilities. Then, they receive a clue that allows them to figure out the secret number. Students will solve this type of riddle in small groups in the next activity.

Materials to Gather
Connecting cubes in towers of 10 and singles

Student-facing Task Statement
My number is less than 60.
My number has 4 ones.
My number is more than 30.
What numbers fit these clues?
Secret number: _________

Student Responses
44

Launch
• Groups of 3
• Give students access to connecting cubes in towers of 10 and singles.
• “We are going to solve number riddles. Let's do one together. I have chosen a secret number and will give you three clues to help you identify my number.”
• Display the clues in the student book.
• “Use the clues to identify numbers that could be my secret number. The clues aren't in any specific order. You can use any clue to start.”

Activity
• 4 minutes: small-group work time
• Monitor for groups of students who started with different clues.
• “Does anyone know my secret number?” (It
could be 34, 44 or 54 because they all fit the clue.)

- Display and read the new clue: “My number is the sum of 24 and 20.”
- “What is my secret number?”
- Share responses.

**Synthesis**

- “As we just saw, sometimes many different numbers fit the clues until you get the last clue. Keep that in mind as you solve Number Riddles with your group in the next activity.”

---

**Activity 2**

More Number Riddles

**Standards Alignments**

Addressing 1.NBT.B, 1.NBT.C

The purpose of this activity is for students to solve number riddles to find a secret number. Students work together to find the numbers that match the clues and justify why those numbers fit the clues (MP3). Then students read the last clue (shaded grey) and identify the secret number. Students rotate between riddles; it is also possible for students to remain in the same place and trade riddles.
Access for English Learners

MLR8 Discussion Supports. Prior to solving the riddles, invite students to make sense of the task and take turns sharing their understanding with their partner. Listen for and clarify any questions about the context.
Advances: Conversing, Representing

Access for Students with Disabilities

Representation: Access for Perception. Provide appropriate reading accommodations and supports to ensure student access to written clues on Number Riddle Cards.
Supports accessibility for: Language, Social-Emotional Functioning

Materials to Gather

Bags or envelopes, Connecting cubes in towers of 10 and singles

Materials to Copy

Number Riddle Cards (groups of 20)

Required Preparation

- Create enough riddles from the Number Riddle Cards so each group of 2 students can have a different riddle. Fold the gray cards. Place each set of clues in a bag or envelope and label based on the letter of the riddle.

Student-facing Task Statement

Secret Numbers

A: ________    B: ________
C: ________    D: ________
E: ________    F: ________
G: ________    H: ________
I: ________    J: ________

Launch

- Groups of 2
- Give each group an envelope with a riddle and access to connecting cubes in towers of 10 and singles.

Activity

- “You are going to solve number riddles. Each riddle has four clues. One clue is shaded and folded. Keep this clue until last. Read the other clues and work together to figure out which numbers fit the clues. Once you agree on what numbers fit all the clues, read the shaded, folded clue. Work together to find the answer and write your answer in your book. Then put all the clues back in the envelope and get ready to
D: 113  
E: 40  
F: 57  
G: 79  
H: 36  
I: 50  
J: 115

move on to the next riddle. I will let you know when to move.”

- 20 minutes: partner work time

**Synthesis**

- Invite students to share the secret number for each riddle.

---

**Lesson Synthesis**

“Today we solved lots of number riddles. I’m really stumped on this one and need your help.”

Display the chart with only the first clue showing. “My number has more than 6 tens.”

“What could my secret number be?” (70, 75, 89, 91, any number from 70 to 120.)

Display the second clue: “My number is less than 100.”

“Now what do you know about the secret number?” (We can cross out any of the numbers that are over 100.)

Display the third clue: “My number has 8 tens.”

“How does this clue change what my secret number could be?” (Now we know we can cross off all the numbers that don’t have 8 tens.)

“What could my number be now?” (80–89)

Display the last clue: “My number is the sum of 51 + 32.”

“What is my secret number? Explain your thinking.”

---

**Response to Student Thinking**

Students choose clues that do not match the number.

**Next Day Support**

- During the launch of the next day’s activity, have students share clues that can be given for the number 95.
Lesson 10: Write Number Riddles

Standards Alignments
Addressing 1.NBT.B, 1.NBT.C, 1.NBT.C.4

Teacher-facing Learning Goals
- Apply place value reasoning to write and solve number riddles.

Student-facing Learning Goals
- Let’s write and solve number riddles.

Lesson Purpose
The purpose of this lesson is for students to apply place value reasoning to write and solve number riddles.

This lesson continues the work with number riddles from the previous lesson. Students write their own riddles and then try to find each other’s secret number.

The cool-down should be completed before the lesson synthesis, as students will share their reflections with the whole class.

If students need additional support with the concepts in this lesson, refer back to Unit 4, Section B in the curriculum materials.

Access for:

Students with Disabilities
- Representation (Activity 1)

English Learners
- MLR8 (Activity 2)

Instructional Routines
True or False (Warm-up)

Materials to Gather
- Bags or envelopes: Activity 1
- Connecting cubes in towers of 10 and singles: Activity 1, Activity 2
- Index cards: Activity 1
- Materials from a previous activity: Activity 2
Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
</tr>
<tr>
<td>Activity 1</td>
<td>15 min</td>
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<tr>
<td>Activity 2</td>
<td>20 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
<tr>
<td>Cool-down</td>
<td>5 min</td>
</tr>
</tbody>
</table>

Teacher Reflection Question

Reflect on the ways you have seen yourself grow in your teaching of mathematics over the course of the school year. In what area have you made the most significant growth? What led to this growth?

Cool-down (to be completed at the end of the lesson)  

What’s the Math?

Standards Alignments
Addressing  1.NBT.B, 1.NBT.C

Student-facing Task Statement

What do you need to know about numbers to write number riddles?

Student Responses

Sample response:
- You have to know the number of tens and ones in a number.
- You have to know how to represent numbers with equations.

Warm-up

True or False: Add within 100

Standards Alignments
Addressing  1.NBT.C.4
The purpose of this True or False is to elicit strategies and understandings students have for adding within 100.

**Instructional Routines**

**True or False**

**Student-facing Task Statement**

Decide if each statement is true or false.

Be prepared to explain your reasoning.

- $60 = 25 + 45$
- $70 = 24 + 46$
- $80 = 32 + 37$

**Student Responses**

- False: $20 + 40 = 60$, so $25 + 45$ has to be more than 60.
- True: $4 + 6$ makes 10, which I added to the 60.
- False: There are only 6 tens in the expression, not 8 tens.

**Launch**

- Display one statement.
- “Give me a signal when you know whether the statement is true and can explain how you know.”
- 1 minute: quiet think time

**Activity**

- Share and record answers and strategies.
- Repeat with each equation.

**Synthesis**

- “How can you explain your answer without finding the value of the sums on the right side?”

---

**Activity 1**

Write Number Riddles

**Standards Alignments**

Addressing 1.NBT.B, 1.NBT.C

The purpose of this activity is for students to write number riddles. Students choose a secret number between 1 and 120, and write four clues that will help their classmates identify the number. As students work, the teacher should review students’ riddles and monitor for groups
that may need help writing clues.

### Access for Students with Disabilities

*Representation: Develop Language and Symbols.* Maintain a visible display to record terms and phrases that will be useful in writing Number Riddles such as: number of tens, number of ones, more than, less than.
*Supports accessibility for: Memory, Language*

### Materials to Gather

Bags or envelopes, Connecting cubes in towers of 10 and singles, Index cards

### Student-facing Task Statement

**Our secret number:** ____________

Our **4** clues:

- Write each clue on an index card.
- Make sure the last clue is an addition expression.
- Fold that clue in half.

### Student Responses

Sample response:

My number is less than 100.
My number is more than 60.
My number has 3 ones.
My number is 3 + 70

### Launch

- Groups of 2
- Give each group four index cards, a bag or envelope, and access to connecting cubes in towers of 10 and singles.
- “When we solved number riddles, what types of clues did we see?” (number of tens, number of ones, more than, less than, addition)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Record responses.

### Activity

- “Now you will write a number riddle with your partner. You will write four clues. One clue should be an addition expression that will be the last clue. Write each clue on an index card and make sure that your number fits all the clues. Fold the card with the addition expression in half.”
- 10 minutes: partner work time
- Consider asking:
  - “What is your secret number?”
  - “What number(s) is your secret number?”
number greater than? Less than?”
○ “What do you know about the tens and ones in your secret number?”
○ “What numbers can you add (subtract) to get this number?”

**Synthesis**

- “Put your clues in an envelope and write your names on the envelope.”

**Advancing Student Thinking**

If students write fewer than three clues, consider asking:

- “What do you know about your secret number?”
- “How can you write a clue using ‘greater than’ or ‘less than’ or ___ tens or ones?”

**Activity 2**

Solve Our Number Riddles

**Standards Alignments**

Addressing 1.NBT.B, 1.NBT.C

The purpose of this activity is for students to apply place value reasoning to solve number riddles written by their classmates. When students solve the number riddles they use their understanding of the number sequence and place value (MP7).

**Access for English Learners**

*MLR8 Discussion Supports.* Students should take turns reading clues and explaining their reasoning to their partner. Display the following sentence frames for all to see: “I noticed _____, so I . . .” Encourage students to challenge each other when they disagree.

*Advances: Speaking, Listening*
Materials to Gather

Connecting cubes in towers of 10 and singles,
Materials from a previous activity

Required Preparation

- Each group of 2 needs to begin with a riddle envelope from the previous activity.

Student-facing Task Statement

Record your ideas as you solve each number riddle.

Student Responses

Answers vary.

Launch

- Groups of 2
- Give each group a riddle envelope and access to connecting cubes in towers of 10 and singles.

Activity

- “Now you are going to solve your classmates’ riddles. Use your workbook page as a place to record your ideas as you solve. When you finish solving a riddle, put it back in the envelope and look for another group who is ready to trade riddles with you.”
- 15 minutes: partner work time

Synthesis

- “Were there any number riddles that were challenging to solve? Why were they more challenging than the other riddles?”

Lesson Synthesis

“Share your work from the cool-down with your partner.”

Invite students to share with the whole class.
Family Support Materials
Family Support Materials

Putting It All Together

In this unit, students put together their understanding from throughout the year to cap off major work and fluency goals of the grade.

Section A: Add and Subtract within 20

In this section, students finalize their fluency with addition and subtraction within 10. Students do an inventory of addition and subtraction facts to identify the facts they are not yet fluent with. They are encouraged to continue working with those facts throughout the section. There is a focus on the relationship between addition and subtraction in order to help students recognize how knowing an addition fact allows them to also know the related subtraction facts. Students recognize how adding and subtracting fluently within 10 helps them add and subtract larger numbers as they work with numbers up to 20.

Section B: Story Problems

In this section, students revisit some of the different types of story problems that were introduced in previous units. They solve these problems in any way that makes sense to them. Students discuss how understanding the relationship between addition and subtraction is helpful when solving these problems. They also discuss methods for addition and subtraction that involve making a ten, which is helpful when working with numbers up to 20.

Section C: Numbers to 120

In this section, students organize, count, and represent groups of up to 120 objects using their understanding of place value. Students create
multiple representations of two-digit numbers, demonstrating their understanding that the two digits in a two-digit number represent amounts of tens and ones and that numbers can also be composed of different amounts of tens and ones.

Try it at home!
Ask your student to solve the following:

• Which facts are you not yet fluent with?

Questions that may be helpful as they share:

• Are there any other facts that could help you with this one?
• How can we represent this fact with pictures or objects?

Near the end of the unit, ask your student to solve the following problems:

• Let’s count (forward/backward) starting at (a number 1-120).
• Let’s find objects in our home to count.

Questions that may be helpful as they work:

• How did you know which number comes next?
• What is a number less than ___? What is a number more than ___?
Unit Assessments

Check Your Readiness A, B and C
End-of-Course Assessment and Resources
- Fluently add and subtract within 10.

- Add fluently within 10.

- Subtract fluently within 10.

- Use the relationship between addition and subtraction.

- Add and subtract within 20.

- Make 10 when adding or subtracting within 20.
<p>| Solve and Add To and Take From, Change Unknown story problems in a way that makes sense to them. |
| Solve Put Together and Take Apart, One Addend Unknown story problems in a way that makes sense to them. |
| Solve Compare, Difference Unknown story problems in a way that makes sense to them. |
| Retell the story. |
| Represent the story with objects or drawings. |
| Explain how their representation matches the story. |
| Represent the story with equations. |
| Answer the question correctly. |</p>
<table>
<thead>
<tr>
<th>Grade   1, Unit 8</th>
<th>Section C</th>
<th>Checkpoint</th>
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</thead>
<tbody>
<tr>
<td>Count a group of up to 120 objects.</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Apply place value understanding to represent a quantity with</td>
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<td>•</td>
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<td></td>
</tr>
<tr>
<td>Represent a number with different amounts of tens and ones.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure: Show the base-ten structure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Represent numbers within 120.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read and write numbers within 120.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organize objects to make counting large groups of objects easier.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Say the count sequence up to 120.</td>
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</tbody>
</table>

Checkpoint
Putting It All Together: End-of-Course Assessment and Resources

1. How many connecting cubes are there?
   Show your thinking using drawings, numbers, or words.

   a.
d.
2. Find the value of each expression. 
   Show your thinking using drawings, numbers, or words.

   a. $7 + 5$

   b. $12 - 5$

   c. $6 + 12$

   d. $17 - 9$
3. Find the value of each expression.
   Show your thinking using drawings, numbers, or words.
   Use connecting cubes if they are helpful.

   a. \(74 + 20\)

   b. \(74 - 30\)

   c. \(23 + 6\)

   d. \(57 + 8\)

   e. \(57 + 38\)
4. Jada has 17 cards.  
   Noah has 9 cards.  
   How many more cards does Jada have than Noah?  
   Show your thinking using drawings, numbers, or words.

5. Jada’s bracelet has 12 beads.  
   7 of the beads are green and the rest are pink.  
   How many pink beads are on Jada’s bracelet?  
   Show your thinking using drawings, numbers, or words.
6. There are 15 kids dancing in the gym. 
   Then 7 of the kids leave to go to the playground. 
   How many kids are dancing in the gym now? 
   Show your thinking using drawings, numbers, or words.

7. In the classroom, there are 7 students dancing, 6 students talking, and 
   3 students playing a game. 
   How many students are there altogether?
   Explain why Kiran is correct.

b. Elena says “15 – 11 is 4. I counted 12, 13, 14, 15 to get 15 so that’s 4.”
   Explain why Elena is correct.

c. Find the value of 18 – 16 in a way that makes sense to you.

A. $6 + 6 = 14$

B. $15 - 8 = 7$

C. $10 + 9 = 19$

D. $18 - 13 = 15$

E. $14 - 5 = 9$
10. Find the number that makes each equation true. Show your thinking using drawings, numbers, or words.

   a. $6 + 8 = \underline{ }$

   b. $10 + \underline{ } = 16$

   c. $\underline{ } - 4 = 7$

11. Use $<$ or $>$ to make each statement true.

   a. $25 \underline{ } 52$

   b. $75 \underline{ } 73$

   c. $38 \underline{ } 40$
12. Clare says that the rectangle is 7 cubes long. Do you agree with Clare? Show your thinking using drawings, numbers, or words.

13. A hallway is longer than a flagpole. The flagpole is longer than a snake. Circle 3 correct statements.

   A. The flagpole is shorter than the hallway.
   B. The snake is longer than the flagpole.
   C. The hallway is shorter than the snake.
   D. The hallway is longer than the snake.
   E. The snake is longer than the hallway.
   F. The snake is shorter than the hallway.
14. Find the value of each expression.
   
   a. $13 + 10$
   
   b. $47 + 10$
   
   c. $88 + 10$
   
   d. $96 - 10$
   
   e. $51 - 10$
   
   f. $30 - 10$

15. Roll a cube on the number mat twice.

   a. Find the value of the sum.

   b. Find the value of the difference.
16. Use <, =, or > to make the statement true.
   Show your thinking using drawings, numbers, or words.
   
   a. $53 + 40 \text{ _____ } 88$

   b. $20 + 55 \text{ _____ } 77$

   c. $45 + 18 \text{ _____ } 60$

   d. $73 + 9 \text{ _____ } 82$

   e. $26 + 48 \text{ _____ } 71$
17. 20 students in Lin’s class chose their favorite magical power. Their choices were to fly, to become invisible, or to heal the sick.

- 7 more students chose to fly than to become invisible.
- Less than 6 students chose to heal the sick.

Show one way to complete the table with the class choices. Show your thinking with drawings, numbers, or words.

<table>
<thead>
<tr>
<th></th>
<th>Favorite Magical Power</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>fly</td>
<td>become invisible</td>
<td>heal the sick</td>
</tr>
</tbody>
</table>
Assessment Answer Keys
Assessment: Section A Checkpoint

Teacher Instructions

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

- Fluently add and subtract within 10.
  - Add fluently within 10.
  - Subtract fluently within 10.
- Add and subtract within 20.
  - Use the relationship between addition and subtraction.
  - Make 10 when adding or subtracting within 20.
Assessment: Section B Checkpoint

Teacher Instructions

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

- Solve Add To and Take From, Change Unknown story problems in a way that makes sense to them.
- Solve Put Together and Take Apart, One Addend Unknown story problems in a way that makes sense to them.
- Solve Compare, Difference Unknown story problems in a way that makes sense to them.
  - Retell the story.
  - Represent the story with objects or drawings.
  - Represent the story with equations.
  - Explain how their representation matches the story.
  - Answer the question correctly.
Assessment: Section C Checkpoint

Teacher Instructions

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

- Count a group of up to 120 objects.
  - Say the count sequence up to 120.
  - Organize objects to make counting large groups of objects easier.
- Apply place value understanding to represent a quantity with written numerals and expressions.
  - Read and write numbers within 120.
  - Represent numbers to show the base-ten structure.
  - Represent the same number with different amounts of tens and ones.
Assessment: End-of-Course Assessment and Resources

Teacher Instructions

The items here focus on major work of the grade, fluencies of the grade, and also include at least one in-depth problem that provides a context where students apply key ideas they have learned over the year. The items included here can be used prior to the final unit to focus remaining time in the year or to assess student understanding at the end of the year. It is not recommended that these resources be used all at once.

Give students access to connecting cubes in towers of 10 and singles. Students also need number mats for one activity (an Instructional master is provided).

Problem 1

Standards Alignments

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

Narrative

Students identify the number of connecting cubes in different images. This item assesses their ability to see the tens and ones and understand that the digits in the number they write represent these two quantities. The second and third examples are deliberately chosen to have the same two digits with the place values reversed to assess that students can distinguish the meaning of the tens place and the ones place.

How many connecting cubes are there?
Show your thinking using drawings, numbers, or words.

a.
Solution

a. 18. There is a ten and there are 8 ones.
b. 36. There are 3 tens and 6 ones.
c. 63. There are 6 tens and 3 ones.
d. 107. There are 10 tens which is 100 and there are 7 ones.
Problem 2

**Standards Alignments**
Addressing 1.OA.B.3, 1.OA.C.6

**Narrative**
Students find the value of expressions within 20 and explain their thinking. They may use equations or draw pictures. The first two problems are closely related and students who identify the relationship between addition and subtraction will use their answer to the first problem to solve the second problem. The third problem does not require composing or decomposing a ten while the other problems do.

Find the value of each expression.
Show your thinking using drawings, numbers, or words.

a. 7 + 5
b. 12 – 5
c. 6 + 12
d. 17 – 9

**Solution**

a. 12. Sample response: I added 3 to 7 to get 10 and then 2 more.
b. 7. Sample response: I know that 7 + 5 is 12 so that means 12 – 5 = 7.
c. 18. Sample response: I put together the ones and that was 8 and then the ten makes 18.
d. 8. Sample response: I took away 7 ones to give me 10 and then 2 more and got 8.

Problem 3

**Standards Alignments**
Addressing 1.NBT.C.4, 1.NBT.C.6

**Narrative**
Students find the value of sums and differences within 100. The first two problems assess student understanding that the digit in the tens place represents the number of tens. The third problem focuses on the ones place as the value does not have a new ten. The last two problems assess student ability to compose a new ten. They may use their answer for the fourth problem to help with the fifth if they think of 38 as 3 tens and 8 ones.
Find the value of each expression.  
Show your thinking using drawings, numbers, or words.  
Use connecting cubes if they are helpful.

a. \(74 + 20\)  
b. \(74 - 30\)  
c. \(23 + 6\)  
d. \(57 + 8\)  
e. \(57 + 38\)

**Solution**

a. 94. Sample response: I added two more tens to the 7 tens in 74.  
b. 44. Sample response: I took away three tens from the 7 tens in 74.  
c. 29. Sample response: I just added the 3 ones and 6 ones to get 9 ones.  
d. 65. Sample response: \(57 + 3 = 60\) and then I added 5 more ones to get 65.  
e. 95. Sample response: I just added 3 tens to my answer for the previous problem.

**Problem 4**

**Standards Alignments**

Addressing 1.OA.A.1

**Narrative**

Students solve a Compare, Difference Unknown story problem. Students may subtract 9 from 17 without understanding why this gives the answer to the problem. They may also perform the wrong operation and add 9 to 17. They may draw a picture or use equations or words to solve the problem.

Jada has 17 cards.  
Noah has 9 cards.  
How many more cards does Jada have than Noah?  
Show your thinking using drawings, numbers, or words.

**Solution**

8. Sample response: If I add 1 to 9 that makes 10 and then 7 more is 17. So that's 1 + 7 or 8 cards.
Problem 5

**Standards Alignments**
Addressing 1.OA.A.1

**Narrative**
Students solve a Put Together, Addend Unknown story problem. If students misread the problem, they may answer 19, thinking that there are 12 beads of one color and 7 of another and the problem asks for the total. Students may draw a picture or write an equation or explain their thinking in words as in the provided solution.

Jada’s bracelet has 12 beads.
7 of the beads are green and the rest are pink.
How many pink beads are on Jada’s bracelet?
Show your thinking using drawings, numbers, or words.

**Solution**

5. Sample response: I added 3 pink beads to make 10 and then 2 more makes 12 so that’s 3 + 2 or 5 pink beads.

Problem 6

**Standards Alignments**
Addressing 1.OA.A.1

**Narrative**
Students solve a Take Away, Result Unknown story problem. As for other story problems, they may draw a picture, or write an equation. If they do not draw a picture to solve the problem they may count back or they may use their understanding of 15 as 10 + 5 as in the provided solution.

There are 15 kids dancing in the gym.
Then 7 of the kids leave to go to the playground.
How many kids are dancing in the gym now?
Show your thinking using drawings, numbers, or words.
Solution

8. Sample response: $15 - 7 = 8$. First I subtracted 5 to get 10 and then 2 more and got 8.

Problem 7

**Standards Alignments**

Addressing 1.OA.A.2

**Narrative**

Students add 3 numbers within 20 to solve a story problem. Students may solve in any way that makes sense to them including using objects or drawings. Some students may notice that 7 and 3 make 10 and take advantage of this as they find the value of the sum. Some students may represent their thinking with equations but this is not an expectation in this item.

In the classroom, there are 7 students dancing, 6 students talking, and 3 students playing a game. How many students are there altogether?

Solution

16. Sample response: I saw that 7 and 3 make 10 and then added 6 more to get 16.

Problem 8

**Standards Alignments**

Addressing 1.OA.B.4, 1.OA.C.5

**Narrative**

Students make sense of two different ways to subtract from a teen number. Both methods focus on the relationship between the two numbers as opposed to taking away the smaller number from the larger. One method is to count back from the larger number and the other is to add on from the smaller number. Students then use whatever method makes sense to them to subtract from a different teen number.


b. Elena says “$15 - 11$ is 4. I counted 12, 13, 14, 15 to get 15 so that’s 4.”
Explain why Elena is correct.

(c) Find the value of $18 - 16$ in a way that makes sense to you.

**Solution**

(a) Kiran counts back 4 numbers to get from 15 to 11. That means the difference between 15 and 11 is 4.

(b) Elena counts on 4 from 11 to get 15. That also means the difference between 15 and 11 is 4.

(c) Sample response: I added 2 to 16 to get 18.

**Problem 9**

**Standards Alignments**

Addressing 1.OA.D.7

**Narrative**

Students select correct equations. Students who select $6 + 6 = 14$ are probably thinking of the fact that $7 + 7 = 14$. Students who select $18 - 13 = 15$ have likely forgotten to subtract the 10 from 13.

Circle 3 correct equations.

A. $6 + 6 = 14$

B. $15 - 8 = 7$

C. $10 + 9 = 19$

D. $18 - 13 = 15$

E. $14 - 5 = 9$

**Solution**

["B", "C", "E"]
Problem 10

**Standards Alignments**
Addressing 1.NBT.B.2.b, 1.OA.D.8

**Narrative**
Students find the number that makes addition and subtraction equations within 20 true. The unknown is placed in all different positions.

Find the number that makes each equation true.
Show your thinking using drawings, numbers, or words.

```plaintext
a. 6 + 8 = [ ]
b. 10 + [ ] = 16
c. [ ] - 4 = 7
```

**Solution**

```plaintext
a. 14. Sample response: I added 4 to 6 to make 10 and then there were 4 more.
b. 6. Sample response: I know that 16 is 10 and 6.
c. 11. Sample response: I found 7 + 4 which is 11.
```

Problem 11

**Standards Alignments**
Addressing 1.NBT.B.3

**Narrative**
Students compare two-digit numbers using < and >. The first item checks that students distinguish properly between the tens and ones digits. The second item has the same number of tens so students can focus on the ones while the third item has one number with fewer tens with some ones and the other number has more tens and no ones.
Use < or > to make each statement true.

a. 25 ____ 52
b. 75 ____ 73
c. 38 ____ 40

Solution

a. <
b. >
c. <

Problem 12

Standards Alignments
Addressing 1.MD.A.2

Narrative

Students identify an inaccurate length measurement. The connecting cubes used to measure the length of a rectangle are not together and extend too far in one direction. If they were put together, they would be shorter than the length of the rectangle.

Clare says that the rectangle is 7 cubes long.
Do you agree with Clare?
Show your thinking using drawings, numbers, or words.

Solution

No. Clare has lots of gaps in the connecting cubes. There are 7 connecting cubes but if she puts them together they will not be the same length as the rectangle.
Problem 13

**Standards Alignments**
Addressing 1.MD.A.1

**Narrative**
Students compare lengths of three objects. They are not given measurements so the item assesses student ability to indirectly compare the length of two objects using a third object and also assesses their understanding that each comparison can be made using “shorter” or “longer.” If students do not select D or F then they need more practice comparing two objects indirectly, using a third object. If they do not select A then they need more practice seeing the same comparison made in both ways, using longer and shorter.

A hallway is longer than a flagpole.
The flagpole is longer than a snake.
Circle 3 correct statements.

A. The flagpole is shorter than the hallway.
B. The snake is longer than the flagpole.
C. The hallway is shorter than the snake.
D. The hallway is longer than the snake.
E. The snake is longer than the hallway.
F. The snake is shorter than the hallway.

**Solution**

["A", "D", "F"]

Problem 14

**Standards Alignments**
Addressing 1.NBT.C.5

**Narrative**
This item addresses adding or subtracting 10 from a 2-digit number. The standard calls for students to be able to do these problems mentally. While it is not possible to tell from a response if
the student did the problem mentally, any work shown will indicate that they need more practice on the mental aspect of this skill.

Find the value of each expression.

a. \(13 + 10\)
b. \(47 + 10\)
c. \(88 + 10\)
d. \(96 - 10\)
e. \(51 - 10\)
f. \(30 - 10\)

Solution

a. 23  
b. 57  
c. 98  
d. 86  
e. 41  
f. 20

Problem 15

**Standards Alignments**

Addressing 1.OA.C.6

**Narrative**

Students demonstrate fluency for addition and subtraction within 10 and also work on sums of single-digit numbers. Here no reasoning is requested as these items are designed to assess whether or not the student can perform the arithmetic accurately, independent of the reasoning they use. Because the number cubes add some randomness to the numbers that will occur, it is important for students to play this addition and subtraction game for a while in order to see a good variety of numbers.

The game can be played either with a number mat, as given in the directions, or by rolling two number cubes and using those numbers. For the sums that are greater than 10, students may need pencil and paper to complete their work accurately.
Roll a cube on the number mat twice.

a. Find the value of the sum.
b. Find the value of the difference.

Solution

Sample response 1: for 7 and 3
a. \(7 + 3 = 10\)
b. \(7 - 3 = 4\)

Sample response 2: for 8 and 5
a. \(8 + 5 = 13\), since \(8 + 2 = 10\) and \(10 + 3 = 13\).
b. \(8 - 5 = 3\)

Problem 16

Standards Alignments
Addressing 1.NBT.B.3, 1.NBT.C.4, 1.NBT.C.5

Narrative

Students compare the value of a sum with a two-digit number using <, =, and >. The first two items add a number of tens to a two-digit number. Students can perform the addition mentally or they may draw a picture or write an equation. The other calculations all involve making a ten if students combine ones with ones. In many cases, students do not need to make the full calculation in order to compare the numbers and the provided solutions show some of the ideas students could use.

Use <, =, or > to make the statement true.
Show your thinking using drawings, numbers, or words.

a. \(53 + 40 \underline{} 88\)
b. \(20 + 55 \underline{} 77\)
c. \(45 + 18 \underline{} 60\)
d. \(73 + 9 \underline{} 82\)
e. \(26 + 48 \underline{} 71\)
Solution

a. > Sample response: I can put the tens together and there are 9 of them and that's more than 88.

b. < Sample response: 7 tens and 5 ones is less than 7 tens and 7 ones.

c. > Sample response: 4 tens and 1 ten make 5 tens and 5 ones and 8 ones is more than another ten.

d. = Sample response: $73 + 7 = 80$ and then 2 more make 82.

e. > Sample response: $48 + 20 = 68$ and I can see it's just 3 more to get 71 and 6 is more than 3.

Problem 17

**Standards Alignments**
Addressing 1.OA.A.1, 1.OA.A.2, 1.OA.C.6

**Narrative**
Students choose the numbers for a data survey given constraints. There are multiple solutions and students will perform addition and subtraction within 20 to choose their numbers. There are many approaches students may take. They may begin by choosing numbers for the students who preferred flying and becoming invisible. They may need to revise these numbers depending on the number of students who prefer healing the sick. On the other hand, if students start by choosing the number of students who chose to heal the sick, then there may be no solution or, if there is a solution, there will only be one and they will need to be creative to find it.

Whichever way students approach the task, the mathematics is what they have been working on all year but they will need to be persistent and may need to try different approaches or experiment with different numbers.

20 students in Lin's class chose their favorite magical power. Their choices were to fly, to become invisible, or to heal the sick.

- 7 more students chose to fly than to become invisible.
- Less than 6 students chose to heal the sick.

Show one way to complete the table with the class choices. Show your thinking with drawings, numbers, or words.

<table>
<thead>
<tr>
<th>Favorite Magical Power</th>
<th>fly</th>
<th>become invisible</th>
<th>heal the sick</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Solution

Sample responses:
I started with 5 students who prefer to become invisible. That means that $7 + 5 = 12$ people like to fly. That's 17 total and since there are 20 students that means 3 preferred to heal the sick.

<table>
<thead>
<tr>
<th>fly</th>
<th>become invisible</th>
<th>heal the sick</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

I started with 4 people who want to heal the sick. That leaves $20 - 4 = 16$ students who prefer being invisible or flying. I tried 3 who prefer being invisible and then $3 + 7 = 10$ prefer to fly. That's 13 total. I tried some other possibilities but could not get 16 total. I was able to get 15 with 4 who prefer being invisible and 11 who prefer to fly. So I went back and changed the number who want to heal the sick to 5.

<table>
<thead>
<tr>
<th>fly</th>
<th>become invisible</th>
<th>heal the sick</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Lesson
Cool Downs
Lesson 2: Relate Addition and Subtraction

Cool Down: Use Related Facts

Mai is still working on $9 - 6 = \square$.

Write an addition equation she can use to help figure out the difference.

Addition equation: _____________________________
Lesson 4: Change Unknown Story Problems

Cool Down: Clare Counts Sharks

Clare counted 8 sharks swimming in a tank.
Then some more sharks swam by.
Clare counted 13 sharks all together.
How many more sharks swam by?
Show your thinking using drawings, numbers, or words.
Lesson 5: Put Together and Take Apart Story Problems

Cool Down: Shooting Stars

Han saw 4 shooting stars.
Lin also saw some shooting stars.
Together they saw 12 shooting stars.
How many shooting stars did Lin see?
Show your thinking using drawings, numbers, or words.
Lesson 9: Solve Number Riddles

Cool Down: Which Clues Fit?

The secret number is 95.

Circle the 4 clues that describe the secret number.

1. My number has 9 tens.
2. My number is greater than 100.
3. My number is $90 + 5$.
4. My number has 9 ones.
5. My number is the sum of 7 tens and 25.
6. My number is greater than 75.
Lesson 10: Write Number Riddles

Cool Down: What’s the Math?
What do you need to know about numbers to write number riddles?
Instructional Masters
### Instructional Masters for Putting It All Together

<table>
<thead>
<tr>
<th>address</th>
<th>title</th>
<th>students per copy</th>
<th>requires cutting?</th>
<th>card stock recommended?</th>
<th>color paper recommended?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Grade1.8.9.2</td>
<td>Number Riddle Cards</td>
<td>20</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Assessment Grade1.8</td>
<td>Checkpoint</td>
<td>0</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Assessment Grade1.8</td>
<td>Checkpoint</td>
<td>0</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Assessment Grade1.8</td>
<td>Number Mat 1-10</td>
<td>2</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Assessment Grade1.8</td>
<td>Checkpoint</td>
<td>0</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>
Riddle A
My number is greater than 50.
My number has 6 tens.
My number is 45 + 17.

Riddle B
My number has 5 ones.
My number is less than 50.
My number is greater than 20.
My number is 20 + 25.
Riddle C
My number is less than 40.

Riddle C
My number is greater than 20.

Riddle C
My number has 3 tens.

Riddle C
My number is 60 - 30.

Riddle D
My number is greater than 90.

Riddle D
My number is less than 120.

Riddle D
My number has 10 tens.

Riddle D
My number has 13 ones.
<table>
<thead>
<tr>
<th>Riddle E</th>
<th>Riddle F</th>
</tr>
</thead>
<tbody>
<tr>
<td>My number is made of tens.</td>
<td>My number is 80 - 40.</td>
</tr>
<tr>
<td>My number is less than 60.</td>
<td>My number has 7 ones.</td>
</tr>
<tr>
<td>My number is greater than 30.</td>
<td>My number is greater than 40.</td>
</tr>
<tr>
<td>My number is 80 - 40.</td>
<td>My number is 29 + 28.</td>
</tr>
<tr>
<td>Riddle G</td>
<td>Riddle H</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>My number has more than 5 tens.</td>
<td>My number has less than 4 tens.</td>
</tr>
<tr>
<td>My number has less than 8 tens.</td>
<td>My number has 9 ones.</td>
</tr>
<tr>
<td>My number is $59 + 20$.</td>
<td>My number is $18 + 18$.</td>
</tr>
<tr>
<td>Riddle I</td>
<td>My number is 90 - 40.</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>My number has more than 4 tens.</td>
</tr>
<tr>
<td></td>
<td>My number has less than 10 tens.</td>
</tr>
<tr>
<td></td>
<td>My number is made of tens.</td>
</tr>
<tr>
<td></td>
<td>My number has 5 ones.</td>
</tr>
<tr>
<td></td>
<td>My number has less than 12 tens.</td>
</tr>
<tr>
<td></td>
<td>My number has more than 10 tens.</td>
</tr>
<tr>
<td>Fluently add and subtract within 10.</td>
<td>Add and subtract within 20.</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Use the relationship between addition and subtraction.</td>
<td>Make 10 when adding or subtracting within 20.</td>
</tr>
<tr>
<td>Solve Add To and Take From, Change Unknown story problems in a way that makes sense to them.</td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>Solve Put Together and Take Apart, One Addend Unknown story problems in a way that makes sense to them.</td>
<td></td>
</tr>
<tr>
<td>Solve Compare, Difference Unknown story problems in a way that makes sense to them.</td>
<td></td>
</tr>
</tbody>
</table>

- Represent the story with drawings or objects.
- Represent the story with equations.
- Explain how their representation matches the story.
- Retell the story.
- Answer the question correctly.
<table>
<thead>
<tr>
<th>Count a group of up to 120 objects.</th>
<th><strong>Checkpoint</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Represent the same number with different amounts of tens and ones.</td>
<td></td>
</tr>
<tr>
<td>Write numerals and expressions.</td>
<td></td>
</tr>
<tr>
<td>Read and write numbers within 120.</td>
<td></td>
</tr>
<tr>
<td>Organize objects to make counting large numbers of objects easier.</td>
<td></td>
</tr>
<tr>
<td>Say the count sequence up to 120.</td>
<td></td>
</tr>
<tr>
<td>Apply place value understanding to represent a quantity with</td>
<td></td>
</tr>
<tr>
<td>Represent the base-ten structure.</td>
<td></td>
</tr>
<tr>
<td>Represent numbers to show the base-ten structure.</td>
<td></td>
</tr>
</tbody>
</table>
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- Adding, Subtracting, and Working with Data
- Addition and Subtraction Story Problems
- Adding and Subtracting Within 20
- Numbers to 99
- Adding Within 100
- Length Measurements Within 120 Units
- Geometry and Time
- Putting it All Together

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