# Adding and Subtracting within 100

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Adding and Subtracting within 100
Teacher Guide
Core Knowledge Mathematics™
Unit 2: Adding and Subtracting within 100

At a Glance

Unit 2 is estimated to be completed in 14-18 days including 2 days for assessment.

This unit is divided into three sections including 12 lessons and 4 optional lessons.

- Section A—Add and Subtract (Lessons 1-4)
- Section B—Decompose to Subtract (Lessons 5-10)
- Section C—Represent and Solve Story (Lessons 11-16)

On pages 8-10 of this Teacher Guide is a chart that identifies the section each lesson belongs in and the materials needed for each lesson.

This unit uses five student centers.

- Capture Squares
- Five in a Row: Addition and Subtraction
- Target Numbers
- Shake and Spill
- Math Stories
Unit 2: Adding and Subtracting within 100

Unit Learning Goals

- Students add and subtract within 100 using strategies based on place value, properties of operations, and the relationship between addition and subtraction. They then use what they know to solve story problems.

Previously, students added and subtracted numbers within 100 using strategies they learned in grade 1, such as counting on and counting back, and with the support of tools such as connecting cubes. In this unit, they add and subtract within 100 using strategies based on place value, the properties of operations, and the relationship between addition and subtraction.

Students begin by using any strategy to find the value of sums and differences that do not involve composing or decomposing a ten. They are then introduced to base-ten blocks as a tool to represent addition and subtraction and move towards strategies that involve composing and decomposing tens.

Students develop their understanding of grouping by place value, and begin to subtract one- and two-digit numbers from two-digit numbers by decomposing a ten as needed. They apply properties of operations and practice reasoning flexibly as they arrange numbers to facilitate addition or subtraction.

For example, students compare Mai and Lin’s methods for finding the value of $63 - 18$.

<table>
<thead>
<tr>
<th>Mai’s Way</th>
<th>Lin’s Way</th>
</tr>
</thead>
<tbody>
<tr>
<td>$63 - 18$</td>
<td>$63 - 18$</td>
</tr>
</tbody>
</table>

At the end of the unit, students apply their knowledge of addition and subtraction within 100 to solve one- and two-step story problems of all types, with unknowns in all positions. To support them in reasoning about place value when adding and subtracting, students may choose to use connecting cubes, base-ten blocks, tape diagrams, and other representations learned in earlier units and grades.
Section A: Add and Subtract

Standards Alignments
Addressing 2.MD.D.10, 2.NBT.A.2, 2.NBT.B.5, 2.NBT.B.9, 2.OA.A.1, 2.OA.B.2
Building Towards 2.NBT.B.5, 2.OA.A.1

Section Learning Goals

- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 – 23, where decomposing a ten is not required.

In this section, students find the value of unknown addends using methods that are based on place value and are introduced to base-ten blocks. They continue to rely on the relationship between addition and subtraction to solve problems involving differences.

Students begin by solving Compare story problems. They use any methods and tools that make sense to them—including diagrams and connecting cubes—to find differences of two-digit numbers.

*Lin and Clare used cubes to make trains.*
*What do you notice? What do you wonder?*

Students then analyze the structure of base-ten blocks and use them to find unknown addends (MP7). Unlike connecting cubes, base-ten blocks cannot be pulled apart, which helps emphasize the structure of two-digit numbers in base ten.

To reason about an unknown addend, they may add tens and ones to the known addend until they reach the value of the sum. They may also start with the total amount and subtract tens from tens and ones from ones to reach the known addend. The numbers encountered here do not require students to decompose a ten when they subtract by place value.

ساهم PLC: Lesson 2, Activity 1, How Did You Find It?

Suggested Centers

- Capture Squares (1–3), Stage 1: Add within 10 (Supporting)
- Five in a Row: Addition and Subtraction (1–2), Stage 5: Add within 100 without Composing (Supporting)
• Capture Squares (1–3), Stage 2: Subtract within 10 (Supporting)
Section B: Decompose to Subtract

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.6, 2.NBT.B.9, 2.OA.B.2
Building Towards 2.NBT.B.5

Section Learning Goals

- Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.

In this section, students subtract one- and two-digit numbers from two-digit numbers within 100. To reason about differences of two numbers, they use methods based on place value, base-ten blocks and diagrams, and properties of operations. The numbers here require students to decompose a ten when subtracting by place.

Students also make sense of different representations of subtraction by place, including those that show their peers’ reasoning. For example, to find the value of 63 − 18, students might use base-ten blocks or drawings to represent tens and ones. In this case, they might decompose 1 ten from 63 and exchange it for 10 ones, making 5 tens and 13 ones. From here, some students may first take away 8 ones, and then 1 ten. Others may take away 1 ten, then 8 ones.

When students discuss different approaches and explain why they result in the same value, they deepen their understanding of the properties of operations and place value.

63 − 18

The reasoning here builds a foundation for students to understand the standard algorithm for subtraction, but students should not be encouraged to use the notation for standard algorithm at this point. Allow them to build conceptual understanding by reasoning with base-ten blocks and drawings and articulating their thinking.

PLC: Lesson 5, Activity 2, Subtract with Base-ten Blocks
Suggested Centers

- Capture Squares (1–3), Stage 3: Add within 20 (Addressing)
- Five in a Row: Addition and Subtraction (1–2), Stage 6: Add within 100 with Composing (Addressing)
- Target Numbers (1–5), Stage 4: Subtract Tens or Ones (Addressing)
Section C: Represent and Solve Story Problems

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.6, 2.OA.A.1, 2.OA.B.2
Building Towards 2.OA.A.1

Section Learning Goals

• Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.

This section allows students to apply their knowledge to solve story problems that involve addition and subtraction within 100. The story problems include all types—Add To, Take From, Put Together/Take Apart, and Compare—and have unknowns in all positions.

Previously, students worked with diagrams that represent Compare problems. Throughout this section, students also make sense of diagrams that could represent Put Together/Take Apart story problems.

Clare and Han are playing a game with seeds.
Clare has 54 seeds on her side of the board.
Han has 16 seeds on his side.
How many seeds are on the board in all?

Which diagram matches this story? Explain your match to your partner.

As students relate quantities in context and diagrams that represent them, they practice reasoning quantitatively and abstractly (MP2).

Throughout the section, students are invited to interpret and solve problems in the ways that make sense to them (MP1). Math tools such as connecting cubes and base-ten blocks should be made available to encourage methods based on place value and the properties of operations to solve the problems.

 PLC: Lesson 12, Activity 1, Interpret the Diagram
Suggested Centers

- Target Numbers (1–5), Stage 5: Subtract Two-digit Numbers (Addressing)
- Capture Squares (1–3), Stage 4: Subtract within 20 (Addressing)
- Shake and Spill (K–2), Stage 5: Cover (up to 20) (Supporting)
- Math Stories (K–2), Stage 4: Add and Subtract (Supporting)
- Math Stories (K–2), Stage 5: Tape Diagrams (Addressing)

Throughout the Unit

Throughout the unit, the warm-up activities help students to transition from addition and subtraction strategies such as counting on and counting back, towards strategies that focus on understanding the value of the digits. The Number Talks in this unit begin with subtraction, as they learn to subtract 2 two-digit numbers, subtract a multiple of ten, and decompose a ten to subtract. The Number Talks then shift to addition with 3 or more addends, which helps students get ready for two-step story problems.

Here is a sampling of Number Talk warm-ups in the unit.

<table>
<thead>
<tr>
<th>lesson 4</th>
<th>lesson 5</th>
<th>lesson 8</th>
<th>lesson 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 3</td>
<td>17 – 7</td>
<td>18 + 10 + 10</td>
<td>5 + 9 + 5</td>
</tr>
<tr>
<td>66 – 3</td>
<td>17 – 8</td>
<td>18 + 20 + 10</td>
<td>25 + 9 + 5</td>
</tr>
<tr>
<td>66 – 30</td>
<td>26 – 6</td>
<td>38 – 20</td>
<td>25 + 15 + 19</td>
</tr>
<tr>
<td>66 – 33</td>
<td>26 – 8</td>
<td>48 – 30</td>
<td>25 + 30 + 15 + 19</td>
</tr>
</tbody>
</table>
## Materials Needed

<table>
<thead>
<tr>
<th>LESSON</th>
<th>GATHER</th>
<th>COPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1</td>
<td>• Connecting cubes in towers of 10 and singles</td>
<td>• none</td>
</tr>
</tbody>
</table>
| A.2    | • Base-ten blocks  
• Connecting cubes | • none |
| A.3    | • Base-ten blocks  
• Connecting cubes | • none |
| A.4    | • Colored pencils or crayons  
• Number cards 0–10  
• Paper clips  
• Two-color counters | • Capture Squares Stage 3 Gameboard (groups of 2)  
• Capture Squares Stage 3 Spinner (groups of 2)  
• Five in a Row Addition and Subtraction Stage 6 Gameboard (groups of 2) |
| B.5    | • Base-ten blocks  
• Connecting cubes | • none |
| B.6    | • Base-ten blocks  
• Number cards 0–10 | • Target Numbers Stage 4 Recording Sheet (groups of 1) |
| B.7    | • Base-ten blocks  
• Connecting cubes | • Using Blocks to Take Away (groups of 4) |
| B.8    | • Base-ten blocks | • none |
| B.9    | • Base-ten blocks | • Sort and Find the Value (groups of 2) |
| B.10   | • Base-ten blocks  
• Materials from previous centers  
• Number cubes | • Target Numbers Stage 5 Recording Sheet (groups of 1) |
| C.11   | • Base-ten blocks  
• Connecting cubes | • none |
<table>
<thead>
<tr>
<th>C.12</th>
<th>● Base-ten blocks</th>
<th>● Story Problem and Diagram Cards (groups of 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.13</td>
<td>● Base-ten blocks</td>
<td>● Equations for Different Types of Word Problems (groups of 2)</td>
</tr>
</tbody>
</table>
|      | ● Materials from a previous lesson | |}
| C.14 | ● Base-ten blocks | ● none |
|      | ● Connecting cubes | |}
|      | ● Tools for creating a visual display | |}
| C.15 | ● Materials from previous centers | ● Math Stories Stage 5 Recording Sheet (groups of 1) |
|      | | ● Math Stories Stage 5 Tape Diagrams (groups of 2) |
| C.16 | ● Materials from a previous activity | ● none |
|      | ● Number cubes | |}
Center: Capture Squares (1–3)

Stage 1: Add within 10

Lessons
- Grade2.2.A1 (supporting)
- Grade2.2.A2 (supporting)

Stage Narrative
Students roll two number cubes and find the sum.

Standards Alignments
Addressing 1.OA.C.6

Materials to Gather
Colored pencils or crayons, Number cubes

Materials to Copy
Capture Squares Stage 1 Gameboard (groups of 2)

Additional Information
Each group of 2 needs two number cubes.

Stage 2: Subtract within 10

Lessons
- Grade2.2.A3 (supporting)

Stage Narrative
Students choose two cards and find the difference.

Standards Alignments
Addressing 1.OA.C.6

Materials to Gather
Colored pencils or crayons, Number cards 0–10

Materials to Copy
Capture Squares Stage 2 Gameboard (groups of 2)
Stage 3: Add within 20

Lessons
- Grade 2.2.B5 (addressing)
- Grade 2.2.B6 (addressing)
- Grade 2.2.B7 (addressing)
- Grade 2.2.B8 (addressing)
- Grade 2.2.B9 (addressing)

Activities
- Grade 2.2.A4.1 (addressing)
- Grade 2.2.B10.2 (addressing)
- Grade 2.2.C15.2 (addressing)

Stage Narrative
Students spin to get a number (6–10) and flip a card (0–10) and find the sum. The spinner includes a wild space where students can choose their own number.

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

Materials to Gather
Colored pencils or crayons, Number cards 0–10, Paper clips

Materials to Copy
Capture Squares Stage 3 Gameboard (groups of 2), Capture Squares Stage 3 Spinner (groups of 2)

Stage 4: Subtract within 20

Lessons
- Grade 2.2.C11 (addressing)
- Grade 2.2.C12 (addressing)
- Grade 2.2.C13 (addressing)
- Grade 2.2.C14 (addressing)

Activities
- Grade 2.2.B10.2 (addressing)
- Grade 2.2.C15.2 (addressing)

Stage Narrative
Students spin to get a number (16–20) and flip a card (0–10). They subtract the number on the card from the number on the spinner. The spinner includes a wild space where students can choose their own number.
Standards Alignments
Addressing 1.OA.C.6, 2.OA.B.2

Materials to Gather
Colored pencils or crayons, Number cards 0–10, Paper clips

Materials to Copy
Capture Squares Stage 4 Gameboard (groups of 2), Capture Squares Stage 4 Spinner (groups of 2)

Stages used in Grade 1

Stage 1
Addressing
• Grade1.2.B
• Grade1.2.C
• Grade1.2.D

Supporting
• Grade1.7.A
• Grade1.7.B
• Grade1.7.C

Stage 2
Addressing
• Grade1.2.C
• Grade1.2.D

Supporting
• Grade1.7.A
• Grade1.7.B
• Grade1.7.C
Center: Five in a Row: Addition and Subtraction (1–2)

Stage 5: Add within 100 without Composing

Lessons
- Grade2.2.A1 (supporting)
- Grade2.2.A2 (supporting)
- Grade2.2.A3 (supporting)

Stage Narrative
Partner A chooses two numbers and places a paper clip on each number. They add the numbers and place a counter on the sum. Partner B moves one of the paper clips to a different number, adds the numbers, and places a counter on the sum. Students take turns moving one paper clip, finding the sum, and covering it with a counter.

Two gameboards are provided, one where students add a one-digit and a two-digit number and one where they add a two-digit and a two-digit number.

Standards Alignments
Addressing 1.NBT.C.4

Materials to Gather
Paper clips, Two-color counters

Materials to Copy
Five in a Row Addition and Subtraction Stage 5 Gameboard (groups of 2)

Additional Information
Each group of 2 needs 25 counters and 2 paperclips.
Stage 6: Add within 100 with Composing

Lessons
- Grade2.2.B5 (addressing)
- Grade2.2.B6 (addressing)
- Grade2.2.B7 (addressing)
- Grade2.2.B8 (addressing)
- Grade2.2.B9 (addressing)

Activities
- Grade2.2.A4.2 (addressing)
- Grade2.2.B10.2 (addressing)
- Grade2.2.C15.2 (supporting)

Stage Narrative
Partner A chooses two numbers and places a paper clip on each number. They add the numbers and place a counter on the sum. Partner B moves one of the paper clips to a different number, adds the numbers, and places a counter on the sum. Students take turns moving one paper clip, finding the sum, and covering it with a counter.

Standards Alignments
Addressing  1.NBT.C.4, 2.NBT.B.5

Materials to Gather
Paper clips, Two-color counters

Materials to Copy
Five in a Row Addition and Subtraction Stage 6 Gameboard (groups of 2)

Additional Information
Each group of 2 needs 25 counters and 2 paper clips.
Stages used in Grade 1

Stage 1

Addressing
- Grade1.1.A
- Grade1.1.B
- Grade1.1.C
- Grade1.3.D

Supporting
- Grade1.4.A
- Grade1.4.B
- Grade1.4.C
- Grade1.5.A
- Grade1.5.B
- Grade1.5.C
- Grade1.6.A
- Grade1.6.B

Stage 2

Addressing
- Grade1.1.A
- Grade1.1.B
- Grade1.1.C
- Grade1.3.D

Supporting
- Grade1.4.A
- Grade1.4.B
- Grade1.4.C
- Grade1.5.A
- Grade1.5.B
- Grade1.5.C
- Grade1.6.A
- Grade1.6.B
Stage 3

Addressing
- Grade1.3.C
- Grade1.3.D

Supporting
- Grade1.4.A
- Grade1.4.B
- Grade1.4.C
- Grade1.5.A
- Grade1.5.B
- Grade1.5.C
- Grade1.6.A
- Grade1.6.B

Stage 4

Addressing
- Grade1.4.A
- Grade1.4.B

Supporting
- Grade1.5.A
- Grade1.5.B
- Grade1.5.C
- Grade1.6.A
- Grade1.6.B

Stage 5

Addressing
- Grade1.5.A
- Grade1.5.B
- Grade1.5.C

Supporting
- Grade1.6.A
- Grade1.6.B
Stage 6

Addressing

- Grade1.5.C

Supporting

- Grade1.6.A
- Grade1.6.B
Center: Target Numbers (1–5)

Stage 4: Subtract Tens or Ones

Lessons
- Grade2.2.B7 (addressing)
- Grade2.2.B8 (addressing)
- Grade2.2.B9 (addressing)

Activities
- Grade2.2.B6.2 (addressing)
- Grade2.2.B10.2 (addressing)
- Grade2.2.C15.2 (addressing)

Stage Narrative
Before playing, students remove the cards that show 0 and 10 and set them aside. Students subtract tens or ones to get as close to 0 as possible. Students start their first equation with 100 and then take turns flipping a number card and choosing whether to subtract that number of tens or ones and write an equation. The difference becomes the first number in the next equation. The player who gets closest to 0 in 6 rounds, without going below 0, is the winner.

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.8

Materials to Gather
Base-ten blocks, Number cards 0–10

Materials to Copy
Target Numbers Stage 4 Recording Sheet (groups of 1)
Stage 5: Subtract Two-digit Numbers

Lessons
- Grade2.2.C11 (addressing)
- Grade2.2.C12 (addressing)
- Grade2.2.C13 (addressing)
- Grade2.2.C14 (addressing)
- Grade2.2.C16 (addressing)

Activities
- Grade2.2.B10.1 (addressing)
- Grade2.2.B10.2 (addressing)
- Grade2.2.C15.2 (addressing)

Stage Narrative

Students subtract two-digit numbers to get as close to 0 as possible. Students start their first equation with 100. Then, they take turns rolling the three cubes to get a number to subtract. They choose one of the numbers on the cubes to represent the tens and the other number to represent the ones. Students subtract their tens and ones from the starting number. The difference becomes the first number in the next equation. The player who gets closest to 0 in 6 rounds, without going below 0, is the winner.

Standards Alignments
Addressing 2.NBT.B.5

Materials to Gather
- Base-ten blocks, Number cubes

Materials to Copy
- Target Numbers Stage 5 Recording Sheet (groups of 1)

Additional Information

Each group of 2 needs 3 number cubes.
Stages used in Grade 1

Stage 1
Addressing
• Grade1.5.B

Supporting
• Grade1.5.C
• Grade1.6.A
• Grade1.6.B
• Grade1.7.B
• Grade1.7.C

Stage 2
Addressing
• Grade1.5.B

Supporting
• Grade1.5.C
• Grade1.6.A
• Grade1.6.B
• Grade1.7.B
• Grade1.7.C

Stage 3
Addressing
• Grade1.5.C

Supporting
• Grade1.6.A
• Grade1.6.B
• Grade1.7.B
• Grade1.7.C
Center: Shake and Spill (K–2)

**Stage 5: Cover (up to 20)**

**Lessons**
- Grade2.2.C11 (supporting)
- Grade2.2.C12 (supporting)

**Stage Narrative**
Students decide together how many counters, between 11–20, to use. Partner A closes their eyes while Partner B shakes, spills, and covers up the yellow counters with a cup. Partner A determines how many counters are under the cup and explains how they know. Both partners record the round. Switch roles and repeat.

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

**Materials to Gather**
Cups, Two-color counters

**Materials to Copy**
Shake and Spill Stage 4 and 5 Recording Sheet (G1 and 2) (groups of 1)

**Additional Information**
Each group of 2 needs a cup and 20 two-color counters.

**Stages used in Grade 1**

**Stage 3**

**Supporting**
- Grade1.2.B
- Grade1.2.C
- Grade1.2.D
- Grade1.3.A
- Grade1.3.B
- Grade1.3.C
- Grade1.4.B
Stage 4

Addressing
- Grade 1.2.B
- Grade 1.2.C
- Grade 1.2.D

Supporting
- Grade 1.3.B
- Grade 1.3.C
- Grade 1.4.B

Stage 5

Addressing
- Grade 1.3.B
- Grade 1.3.C

Supporting
- Grade 1.4.B
Center: Math Stories (K–2)

Stage 4: Add and Subtract

Lessons
- Grade.2.C13 (supporting)
- Grade.2.C14 (supporting)

Stage Narrative
Students pose and solve addition and subtraction story problems about pictures. Students write an equation to represent their story problem.

Variation:
Pages of picture books can also be offered to help students generate stories.

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

Materials to Copy
Math Stories Stage 1 and 4 Pictures (groups of 8),
Math Stories Stage 4 Recording Sheet (groups of 2)

Stage 5: Tape Diagrams

Lessons
- Grade.2.C16 (addressing)

Activities
- Grade.2.C15.1 (addressing)

Stage Narrative
Students pose and solve addition and subtraction story problems about tape diagrams.

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

Materials to Copy
Math Stories Stage 5 Recording Sheet (groups of 1),
Math Stories Stage 5 Tape Diagrams (groups of 2)
Stages used in Grade 1

Stage 4

Addressing

- Grade1.2.A
- Grade1.2.B
- Grade1.2.C
- Grade1.2.D
Section A: Add and Subtract

Lesson 1: Add and Subtract to Compare

Standards Alignments

Addressing: 2.MD.D.10, 2.NBT.B.5, 2.OA.A.1
Building Towards: 2.OA.A.1

Teacher-facing Learning Goals

- Add and subtract within 100 in a way that makes sense to them without composing or decomposing a ten.
- Solve problems within 100.

Student-facing Learning Goals

- Let's solve Compare problems with larger numbers.

Lesson Purpose

The purpose of this lesson is for students to add and subtract within 100 without composing or decomposing a ten. Students find sums and differences in a way that makes sense to them and compare methods based on place value and the relationship between addition and subtraction.

Up to this point, students have only subtracted multiples of ten from other two-digit numbers within 100. In this lesson, students build on their work with interpreting bar graphs and solving Compare story problems to add and subtract within 100 with larger numbers. The representations presented in both activities (bar graphs and connecting cubes) invite students to use and connect a variety of different methods and prepare them for subtraction methods based on place value.

Access for:

- Students with Disabilities
  - Engagement (Activity 1)

Instructional Routines

MLR7 Compare and Connect (Activity 2), 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>
<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>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

In grade 1, students used connecting cubes to understand a ten as a group of 10 ones. How did using the connecting cubes in today’s lesson help students consider strategies based on place value when adding or subtracting?

Cool-down (to be completed at the end of the lesson) 5 min

Compare the Trains

Standards Alignments

Addressing 2.NBT.B.5, 2.OA.A.1

Student-facing Task Statement

Elena used 23 cubes to make a train. Jada used 36 cubes to make a train.

How many more cubes did Jada use than Elena? Show your thinking. Use cubes if it helps.

Student Responses

Jada used 13 more cubes. Sample response:

23 + 10 = 33
33 + 3 = 36
10 + 3 = 13
Warm-up

Which One Doesn't Belong: Compare Representations

Standards Alignments
Building Towards 2.OA.A.1

This warm-up prompts students to carefully analyze and compare features of different representations of two-digit numbers. When they share their comparisons, listen for the vocabulary they use to talk about the characteristics of tape diagrams, bar graphs, and base-ten diagrams and provide them opportunities to clarify their meaning (MP6).

Instructional Routines

Which One Doesn't Belong?

Student-facing Task Statement

Which one doesn't belong?

Launch

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

Activity

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

Synthesis

- “How does each representation show the difference between cloudy and sunny days?” (C may show the difference with blocks. If the top train of blocks is sunny days, you can see there are more sunny days. B shows it with a tape diagram, the part with the question mark shows the difference. D uses a
Student Responses

- A is the only one that doesn't show the numbers with one long bar going across.
- B is the only one that doesn't have lines to show ones or groups of ten.
- C is the only one that doesn't have labels and doesn't use only blue.
- D is the only one that doesn't have just 25 and 15. It has other numbers.

bar graph. You can see sunny days has more than cloudy days and you could count the number of spaces they are apart. A shows with blocks too, but they are in towers of ten and single cubes. You can see sunny days has ten more.)

Activity 1

Movie Snacks

Standards Alignments

Addressing 2.MD.D.10, 2.NBT.B.5

The purpose of this activity is for students to compare different methods for solving problems within 100 using data presented in a bar graph. Students may use whatever method makes the most sense to them. The synthesis focuses on sharing multiple methods that students use to find the difference. Monitor for students who use methods that rely on using the bar graph to count on or count back and those that use more abstract methods, such as adding or subtracting by place value.

For example, when combining categories, some students may choose to use the graph to count on. Other students may choose to combine tens and ones with or without drawing a base-ten diagram or other representation.

Access for Students with Disabilities

Engagement: Provide Access by Recruiting Interest. Provide choice. Invite students to choose a strategy and tool that works for them. Encourage students to use that same strategy and tool for both problems so they are not overwhelmed.

Supports accessibility for: Conceptual Processing, Organization, Attention

Materials to Gather

Connecting cubes in towers of 10 and singles
Required Preparation

- Create towers of 10 with the connecting cubes.
- Have single connecting cubes available.

Student-facing Task Statement

Use the bar graph to answer the questions.

1. What is the total number of students that chose popcorn or pretzels? Show your thinking.
2. How many more students chose nachos than chose popcorn? Show your thinking.

Launch

- Groups of 2
- Display the bar graph.
- “What does this graph tell us?” (students’ favorite movie snacks, students picked their favorite movie snacks)
- 1 minute: quiet think time
- 1 minute: partner discussion
- Share responses.
- Give students access to connecting cubes in towers of ten and singles.

Activity

- “Use the bar graph to answer the questions. Show your thinking using drawings, numbers, or words.”
- “You can use the connecting cubes or any of the other representations we saw in the warm-up to help you.”
- 8 minutes: independent work time
- “Now compare your methods with your partner. How are they similar or different?”
- 4 minutes: partner discussion
- As students work, monitor for students who:
  - use the bar graph to count on or count back
  - use the connecting cubes or base-ten drawings to show adding or subtracting tens with tens and ones with ones

Synthesis

- Invite previously identified students to
cross out 2 tens and 1 one. Students label to show the difference of 11.

- \(32 - 21 = 11\)

share the method they used to find how many more students chose nachos than chose popcorn.

- As needed, record student methods using equations.

- Consider asking:
  - “How are these methods the same? How are they different?”
  - “How does the method work? Why does each method find the same value?”

### Activity 2

Build and Compare

**Standards Alignments**

**Addressing**

2.NBT.B.5

The purpose of this activity is for students to solve Compare problems within 100 using methods based on place value and the relationship between addition and subtraction. Connecting cubes are used as a representation in this activity to support students in their transition from subtraction methods based on counting on or counting back by one to methods based on subtracting tens from tens and ones from ones. Students build trains out of towers of 10 and single connecting cubes. Invite students to use the methods that make the most sense to them when they work to find the difference. Monitor for students who use blocks or other representations to show adding or subtracting tens and tens and ones and ones to share in the synthesis.

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

Required Preparation
- Create towers of 10 with the connecting cubes.
- Have single connecting cubes available.

Student-facing Task Statement
1. Lin and Clare used cubes to make trains. What do you notice? What do you wonder?

2. Make trains with cubes.

<table>
<thead>
<tr>
<th>partner</th>
<th>number of cubes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner A</td>
<td>46</td>
</tr>
<tr>
<td>Partner B</td>
<td>22</td>
</tr>
</tbody>
</table>

3. Find the total number of cubes you and your partner used. Show your thinking.
4. Find the difference between the number of cubes you and your partner used. Show your thinking.

Student Responses
1. Answers vary.
2. 68 cubes. Sample response:
   - $40 + 20 = 60$
   - $6 + 2 = 8$
   - $60 + 8 = 68$
3. 24 cubes. Sample responses:
   - Students show adding on 2 towers of ten and 4 single connecting cubes to the smaller train.
   - Students use their connecting cubes

Launch
- Groups of 2
- Assign Partner A and Partner B.
- Give students access to towers of ten and loose connecting cubes.
- Display the image of the cubes.
- “What do you notice? What do you wonder?” (Lin has more cubes. They have 40 cubes all together. Lin has ten more cubes.)
- Monitor for students who notice the groups of ten cubes and use this structure to find the total number of cubes or the difference.
- 30 seconds: quiet think time
- Share responses

Activity
- “You and your partner will each build a train with connecting cubes. Then, answer the questions about your trains.”
- “Show your thinking using drawings, numbers, or words.”
- 8 minutes: partner work time
- Monitor for students who:
  - count on or combine tens and ones to find the difference
  - count back or separate tens and ones to find the difference
or base-ten drawings to show taking away 2 tens and 2 ones from the larger train.

### Synthesis

**MLR7 Compare and Connect**

- “Create a visual display that shows your thinking about the difference between the number of cubes you and your partner used. You may want to include details such as diagrams, drawings, and labels to help others understand your thinking.”
- 5–7 minutes: gallery walk
- Invite previously identified students to share their methods for finding the difference using cubes.
- “What is the same and what is different between the way these two groups found the difference?” (Both groups found the same value. One group shows adding on tens and ones. The other group shows taking away tens and ones.)
- 30 seconds quiet think time
- 1 minute: partner discussion
- If time, consider asking:
  - “What other methods did you see groups use? How are they the same and how are they different from these two methods?” (Other groups added on and subtracted to, but they showed it with different diagrams and drawings. Some used only equations. Some showed counting by ones.)

### Advancing Student Thinking

If students build their numbers out of single cubes without using towers of 10, consider asking:

- “How did you choose which blocks to use when you built your number?”
- “How could you use the towers of 10 to build your number?”
Lesson Synthesis

Display: $46 - 22 = ?$

“This equation shows one way to represent the difference between your blocks.”

“What are the different ways we found the difference?” (counting on, counting back, taking away blocks, adding blocks)

Display: $22 + ? = 46$

“Why can we use methods that show taking away and use methods that add to find the difference?”
(because $46 - 22 = ?$ is like $22 + ? = 46$. When you subtract, you can think about taking away or you can think about what addend is missing.)

Suggested Centers

- Capture Squares (1–3), Stage 1: Add within 10 (Supporting)
- Five in a Row: Addition and Subtraction (1–2), Stage 5: Add within 100 without Composing (Supporting)

Response to Student Thinking

Students find the sum of the cubes rather than the difference.

Next Day Support

- Before the warm-up, have students brainstorm ways to represent the problem and methods for finding how many more when comparing.
Lesson 2: Find the Unknown Addend

Standards Alignments

Addressing 2.NBT.A.2, 2.NBT.B.5, 2.NBT.B.9
Building Towards 2.NBT.B.5

Teacher-facing Learning Goals
- Describe their methods using place value understanding.
- Find the unknown addend in equations within 100.

Student-facing Learning Goals
- Let's find values that make the equations true.

Lesson Purpose
The purpose of this lesson is for students to find the value of unknown addends by adding or subtracting within 100.

In a previous lesson, students added and subtracted within 100 without composing or decomposing a ten to solve Compare problems. In this lesson, students add or subtract within 100 without composing or decomposing a ten and share the methods they use to find unknown addends. During each synthesis, students share methods based on place value and discuss the relationship between addition and subtraction.

This lesson also serves the purpose of introducing base-ten blocks as a math tool that can be used to represent larger numbers and computation methods based on place value. Throughout the lesson, students have opportunities to describe the usefulness of this new tool in comparison to connecting cubes and other representations they may use to find unknown values (MP5).

Access for:

Students with Disabilities
- Engagement (Activity 2)

English Learners
- MLR8 (Activity 1)

Instructional Routines
5 Practices (Activity 1), Choral Count (Warm-up)
Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
- Connecting cubes: Activity 1, Activity 2

Lesson Timeline

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

Teacher Reflection Question
Who got to do math today in class and how do you know? Identify the norms or routines that allowed those students to engage in mathematics. How can you adjust these norms and routines so all students do math tomorrow?

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

Standards Alignments
Addressing 2.NBT.B.5

Student-facing Task Statement
Find the number that makes the equation true. Show your thinking. Use blocks or cubes if it helps.

36 + _____ = 78

Student Responses
42. Sample responses:
- Students draw 3 tens and 6 ones to show 36 and draw 4 tens and 2 ones to show adding 42. Students label to show the unknown value was 42 and that they have a total of 78.
- 70 – 30 = 40
  8 – 6 = 2
  40 + 2 = 42
Warm-up

Choral Count: Count Back by 10

Standards Alignments

Addressing 2.NBT.A.2
Building Towards 2.NBT.B.5

The purpose of this Choral Count is to invite students to practice counting by 10 and notice patterns in the count. As students make sense of patterns in the way that this choral count is recorded, they may notice and explain patterns in the way the tens place changes in the numbers arranged in rows (MP7). For example, students may notice that the numbers across each row change by 2 tens and change by tens in each column. The counting practice and conversations in this activity helps students develop fluency and will be helpful later in this lesson when students will need to use or make sense of computation methods based on place value or counting by 10.

Instructional Routines

Choral Count

Student Responses

- Record count

97  87  77  67  57
47  37  27  17  7

Sample responses:

- The numbers change by 10 going across in each row.
- The number below each number changes by 5 tens.
- The numbers change by 60 if you go diagonally down to the right, but only change by 40 when you go diagonally down to the left.

Launch

- “Count back by 10, starting at 97.”
- Record as students count.

97  87  77  67  57
47  37  27  17  7

- Stop counting and recording at 7.

Activity

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

Synthesis

- “Who can restate the pattern in different words?”
• “Does anyone want to add an observation on why that pattern is happening here?”
• “Do you agree or disagree? Why?”

Activity 1
How Did You Find It?

Standards Alignments
Addressing 2.NBT.B.5

The purpose of this activity is for students to find the unknown addend in an equation in a way that makes sense to them and compare their methods. In the launch, students are introduced to base-ten blocks and compare them to connecting cubes. During the launch, students should be given time to observe the image and touch the connecting cubes and base-ten blocks.

Students may find the unknown addend using any method that makes sense to them. Monitor and select students with the following methods to share in the synthesis:

• count on or count back using connecting cubes or base-ten blocks
• use base-ten blocks to show combining or separating tens and ones
• use base-ten drawings to show combining or separating tens and ones

Students have the opportunity in the activity and the activity synthesis to consider the available tools and make a choice that best helps them find the unknown addend (MP5). To support student reflection on the utility of each tool, provide each group with towers of ten connecting cubes, but not enough to represent the numbers in the equation without needing to create new towers of ten.

Access for English Learners

MLR8 Discussion Supports. When groups compare methods, invite students to take turns sharing their responses. Ask students to restate what they heard using precise mathematical language and their own words. Display the sentence frame: “I heard you say . . . .” Original speakers can agree or clarify for their partner.

Advances: Listening, Speaking
Instructional Routines

5 Practices

Materials to Gather

Base-ten blocks, Connecting cubes

Required Preparation

- Each group of 2 needs 90–100 connecting cubes, but no more than 3–5 towers of 10 cubes should be included in their collection. Break apart any extra towers for this activity.

Student-facing Task Statement

1. What is the same and what is different between these tools?
2. Find the number that makes the equation true. Show your thinking using the cubes, blocks, or drawings.

41 + _____ = 84

Student Responses

1. Answers vary.
2. 43. Sample response:

Launch

- Groups of 2
- Give each group towers of 10, single connecting cubes, and base-ten blocks.
- Display the image.
- “Each group has some connecting cubes and some base-ten blocks.”
- “What is the same and what is different between these tools?” (They both are cubes or towers of cubes. The connecting cubes are in towers of 10, single cubes, and some are in towers of different sizes. The blocks are only in tens and ones. The blocks in tens do not come apart.)
- 1 minute: quiet think time
- 1 minute: partner discussion
- Share responses.

Activity

- “Work together to find the number that makes the equation true. You can use the connecting cubes, base-ten blocks, or other representations to help find the number or show your thinking. Be prepared to explain your thinking.”
- 6 minutes: partner work time
- As students work, consider asking:
Why did you choose this tool?  
How did you find the number that makes the equation true?  
What is another way you could use this tool to find the unknown number?  
Now compare your method with another group. How are your methods the same? How are they different?  
2 minutes: group discussion

Synthesis

Invite previously identified groups to share their methods in the given order.  
Consider asking:  
Why did you choose this tool to help you find the number?  
“How are the methods the same? How are they different?” (Some methods are the same, they just used different tools to show it. Some methods used the same tool, but are different because one group added tens and ones to find the unknown number, but another group took away tens and ones to find the unknown number.)

Activity 2

You Go This Way, I’ll Go That Way

Standards Alignments

Addressing 2.NBT.B.5, 2.NBT.B.9

The purpose of this activity is for students to find the unknown addend in an equation using addition and subtraction within 100 without composing or decomposing a ten. The synthesis
focuses on which method students prefer and why. They continue to develop their understanding of the relationship between addition and subtraction as they describe and connect different methods that find the same unknown number.

Access for Students with Disabilities

Engagement: Develop Effort and Persistence. Chunk this task into more manageable parts. Check in with students to provide feedback and encouragement after each chunk. Give feedback on whether or not they are using the tools strategically and the efficiency of their strategies. Supports accessibility for: Conceptual Processing, Language, Visual-Spatial Processing

Materials to Gather

Base-ten blocks, Connecting cubes

Student-facing Task Statement

Han and Mai use blocks to find the number that makes the equation true.

17 + _____ = 48

1. Han starts by using blocks to show 17. Show how he could find the number that makes the equation true.
2. Mai starts by using blocks to show 48. Show how she could find the number that makes the equation true.
3. Try this one on your own. Choose who will start with 21 and who will start with 96.

21 + _____ = 96

4. Show your partner how you found the number that makes the equation true.

Student Responses

1. 31. Sample responses:
   ◦ Students use 1 ten and 7 ones to show 17. Then they add 3 tens and 1 one. Students count the tens and ones to confirm the blocks show a value of 48 and count the tens and

Launch

● Groups of 2
● Give access to towers of 10, single cubes, and base-ten blocks.
● Display 17 + _____ = 48.
● “Han and Mai are using blocks to find the number that makes this equation true. Both use blocks, but they start by showing different numbers.”

Activity

● “Work together to use the base-ten blocks to show Han's method and Mai's method.”
● “After you do Han's method and Mai's method together, decide who will start with 21 and who will start with 96. Use the blocks to find the unknown number on your own.”
● 8 minutes: partner work time

Synthesis

● “Which method did you like best? Starting with the total and taking away or starting with the addend you know and adding on?”
ones they added to 17.

- $10 + 30 = 40$
- $7 + 1 = 8$
- $30 + 1 = 31$

2. Sample responses:

- Students use blocks to show 48 with 4 tens and 8 ones. Students remove 1 ten and 7 ones. Students count the remaining tens and ones.
- $40 - 10 = 30$
- $8 - 7 = 1$
- $30 + 1 = 31$

3. Sample responses:

- Student shows 2 tens and 1 one and adds on 7 more tens and 5 more ones.
- Student shows 9 tens and 6 ones. Student moves 2 tens and 1 one away.

4. Sample responses:

- I started with 9 tens and 6 ones and moved 2 tens then 1 one over here. I had 7 tens and 5 ones left.
- I started with 2 tens and 1 one. I added 7 more tens and 5 more ones.
- We both found 75 as the unknown value.

(I like subtracting because it's easier for me to see what the unknown number is when I use blocks or drawings. I prefer to add on because the equation shows addition.)

- “Why did you and your partner find the same number even though one person added and one person subtracted?” (The amount one partner added was the same as what the other partner subtracted. When you subtract, it's like finding the unknown addend. Addition and subtraction are related.).

Lesson Synthesis

Display:

- $67 - 55 = _____$
- $55 + _____ = 67$

“How are these equations the same? How are they different?” (They are the same because the unknown number will be the same. Subtraction is like finding an unknown addend. They are different because one equation is subtraction and the other is addition.)
“What tool would you use to find the value that makes each equation true? Explain how you would use it.”

**Suggested Centers**

- Capture Squares (1–3), Stage 1: Add within 10 (Supporting)
- Five in a Row: Addition and Subtraction (1–2), Stage 5: Add within 100 without Composing (Supporting)

**Response to Student Thinking**

Students use blocks or drawings to add on to 36 or take away from 78, but do not clearly identify the number that makes the equation true.

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

**Next Day Support**

- Before the first activity, display examples of students adding on to find the unknown addend and examples of taking away to find the unknown addend. Compare the representations and discuss how each clearly shows the unknown addend.

**Prior Unit Support**

Grade 1, Unit 5, Section A: Add Without Making a Ten
Lesson 3: Add or Subtract to Solve Story Problems

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1
Building Towards 2.NBT.B.5

Teacher-facing Learning Goals
• Describe their methods using place value understanding.
• Solve story problems involving addition and subtraction within 100 without composing or decomposing a ten.

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

Lesson Purpose
The purpose of this lesson is for students to solve story problems involving addition and subtraction within 100 without composing or decomposing a ten.

In previous grades, students solved a variety of Add To, Take From, Put Together/Take Apart, and Compare problems. In previous lessons, students added and subtracted within 100 without composing or decomposing a ten using methods based on place value and the relationship between addition and subtraction.

In this lesson, students are invited to solve story problems and show their thinking or computations in whatever way makes sense to them. The activity and lesson syntheses focus on describing and connecting methods based on place value in preparation for upcoming lessons.

This lesson has a Student Section Summary.

Access for:

Students with Disabilities
• Representation (Activity 2)

Instructional Routines
How Many Do You See? (Warm-up), MLR6 Three Reads (Activity 1)
Materials to Gather

- Base-ten blocks: Activity 1, Activity 2
- Connecting cubes: Activity 1, Activity 2

Lesson Timeline

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Teacher Reflection Question

In the first activity, students used the Three Reads routine to make sense of the problem. What strategies did you see students use to make sense of the story problems on their own? What questions did you ask to ensure students made connections between their representations, calculations, and the context of the stories?

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

Time to Leave

Standards Alignments

Addressing 2.NBT.B.5, 2.OA.A.1

Student-facing Task Statement

89 students were at the zoo. 41 students left the zoo on the first bus. How many students are at the zoo now?

Show your thinking. Use blocks if it helps.

Student Responses

48 students. Sample response:

- Students draw 8 tens and 9 ones and cross out 4 tens and 1 one. Students label to show that there are 48 students at the zoo.
- $80 - 40 = 40$
- $9 - 1 = 8$
- $40 + 8 = 48$
Warm-up
How Many Do You See: Base-ten Diagram

Standards Alignments
Building Towards 2.NBT.B.5

The purpose of this How Many Do You See is to build on what students know about place value to make sense of a visual representation of two-digit numbers. When students describe how many they see by grouping tens with tens and ones with ones or composing a ten, they show how they look for and make use of base-ten structure (MP7). This will be helpful when students use base-ten representations to compose and decompose a ten in future lessons.

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 did you know how many were in the third image?”
- “How could we represent this number another way?” (Instead of 10 ones, we could
Student Responses

Sample response:

- 25. I see 2 tens and 5 ones.
- 45. I see 4 tens and 5 ones.
- 50. I see 4 tens and 10 ones. $40 + 10 = 50$.

Activity 1

Fun at the Zoo

Standards Alignments

Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to interpret and solve a story problem by adding or subtracting within 100. Students solve an Add To, Start Unknown problem, one of the more difficult problem types from grade 1. Students begin the activity by looking at the problem displayed, rather than in their books. At the end of the launch, students open their books and work on the problem.

Monitor for students who use methods that show adding or subtracting by place to share in the synthesis. Students who choose to use connecting cubes or base-ten blocks or who draw a diagram to represent the situation are using tools strategically (MP5). During the synthesis, invite all students to explain why these methods work using their understanding of place value.

This activity uses *MLR6 Three Reads*. Advances: reading, listening, representing. Some students may benefit from continued use of MLR6 to support reading comprehension in Activity 2.

Instructional Routines

MLR6 Three Reads
Materials to Gather

Base-ten blocks, Connecting cubes

Student-facing Task Statement

Some students were waiting on the bus to go to the zoo. Then 34 more students got on. Now there are 55 students on the bus. How many students were on the bus at first?

Launch

- Groups of 2
- Give students access to connecting cubes and base-ten blocks.
- “Have you ever been on a field trip? Where did you go?”
- “Did everyone on your field trip stay together the whole time or did you split into smaller groups?”

MLR6 Three Reads

- Display only the story problem, without revealing the question.
- “We are going to read this problem 3 times.”
- 1st Read: “Some students were on the bus to go to the zoo. Then 34 more students got on. Now there are 55 students on the bus.”
- “What is this story about?”
- 1 minute: partner discussion.
- Listen for and clarify any questions about the context.
- 2nd Read: “Some students were on the bus to go to the zoo. Then 34 more students got on. Now there are 55 students on the bus.”
- “What are all the things we can count in this story?” (number of students who started the story on the bus, number of students who got on next, the total number of students on the bus, the number of buses)
- 30 seconds: quiet think time
- 2 minutes: partner discussion

Student Responses

21. Sample responses:

- Students use base-ten blocks to add on 2 tens and a one to 34.
  
  \[
  \_ + 34 = 55
  \]

  \[
  30 + 20 = 50 \\
  4 + 1 = 5 \\
  20 + 1 = 21
  \]

- Students draw 5 tens and 5 ones and cross out 3 tens and 4 ones. Students label to show there are 21 students on the bus.

  \[
  50 - 30 = 20 \\
  5 - 4 = 1 \\
  20 + 1 = 21
  \]
• Share and record all quantities.
• Reveal the question.
• 3rd Read: Read the entire problem, including the question aloud.
• “What are different ways we can solve this problem?” (We could subtract the number of students who got on the bus second from the total. We could add to the number of students who got on the bus until we get to the total.)
• 30 seconds: quiet think time
• 1–2 minutes: partner discussion

**Activity**

• 5 minutes: independent work time
• Monitor for students who:
  ○ use base-ten blocks or base-ten diagrams to show adding tens to tens or ones to ones
  ○ use base-ten blocks or base-ten diagrams to show subtracting from tens or ones from ones

**Synthesis**

• Invite previously identified students to share.
• Record student methods using equations.
• “How are these methods the same?” (They both show tens and ones. They both thought of keeping the tens with the tens and ones with the ones.)

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**Activity 2**

More Fun at the Zoo

**15 min**
Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is to solve different story problems by adding or subtracting within 100 without composing or decomposing a ten. Each problem elicits the relationship between addition and subtraction and can be solved with either operation. Students are encouraged to describe methods based on place value and should have access to base-ten blocks. In the synthesis, students compare representations and make connections between concrete representations and drawings.

Invite students to use the Three Reads routine to support reading comprehension. Some students may also benefit from reading the story problems with their partner before working independently.

Access for Students with Disabilities

Representation: Develop Language and Symbols. Synthesis: Invite students to explain their thinking orally, using the connecting cubes or base-ten blocks, while students work independently. Check in frequently to make sure the students are making connections between the story and the cubes or blocks.
Supports accessibility for: Language, Visual-Spatial Processing

Materials to Gather
Base-ten blocks, Connecting cubes

Student-facing Task Statement
Solve each story problem. Show your thinking.

1. There were 65 students in the monkey house. 23 left to see the hippos. How many are still in the monkey house?
2. 58 students went to see the bears. 27 students went to see the lions. How many more students went to see the bears than the lions?
3. Some birds were in cages outside of the bird house. 34 birds were inside the bird house. In all, there were 88 birds. How many were in the cages outside?

Launch
• Groups of 2
• Give students access to connecting cubes and base-ten blocks.

Activity
• 6 minutes: independent work time
• 4 minutes: partner discussion
• Monitor for students who use base-ten blocks and students who use base-ten diagrams to represent methods based on adding or subtracting by place.
Student Responses

1. 42 students. Sample response:
   - \[65 - 23 = 42\]
   Students draw 6 tens and 5 ones to show the students at the monkey house and cross off 2 tens and 3 ones to show the students who leave. Students label to show that 42 students are left.

2. 31 students. Sample response:
   - \[58 - 27 = 31\]
   Students draw 5 tens and 8 ones to show 58 and cross out 2 tens and 7 ones to show subtracting 27. Students label to show they understand that there are 31 more students who went to see the bears.

3. 54 birds. Sample response:
   - \[____ + 34 = 88\]
   Students draw 3 tens and 4 ones to show one addend. Students draw 5 more tens and 4 ones and label to show they know the unknown addend is 54 and the total is 88.
   - \[30 + 50 = 80\]
   - \[4 + 4 = 8\]
   - \[50 + 4 = 54\]

Synthesis

- Invite previously identified students to share. Consider selecting a student who used base-ten blocks first, followed by a student who used a base-ten drawing.
- If no students use a base-ten drawing, draw one to record the way a student uses their blocks to represent and solve the problem.
- “How are these representations the same?” (Both started by representing 88 birds. _____ moved away 3 tens and 4 ones and _____ crossed out 3 tens and 4 ones.)
- 1 minute: quiet think time
- Share responses.

Advancing Student Thinking

If students do not show evidence of grouping tens and ones, consider asking:
- “What did you do to answer the story problem?”
- “How could you use what you know about tens and ones to add or subtract?”

Lesson Synthesis

[10 min]
Display a base-ten diagram from Activity 2 that was shared in the activity synthesis.

“Let’s come up with equations we could write to match how _____ used their diagram.” (80 – 30 = 50, 8 – 4 = 4, 50 + 4 = 54)

Suggested Centers

- Capture Squares (1–3), Stage 2: Subtract within 10 (Supporting)
- Five in a Row: Addition and Subtraction (1–2), Stage 5: Add within 100 without Composing (Supporting)

✍ Student Section Summary

In this section, we used addition and subtraction to compare and to find unknown values. We used different tools to show how to add and subtract two-digit numbers.

We learned that when you subtract 2 two-digit numbers you can think about subtracting tens from tens and ones from ones.

\[
\begin{align*}
50 - 30 &= 20 \\
5 - 4 &= 1 \\
20 + 1 &= 21
\end{align*}
\]
Response to Student Thinking

Students find a value other than 89 and do not show evidence of using base-ten blocks or other representations.

Next Day Support

● Before the warm-up, select students to share their representation of the story problem and how they found the solution. Invite students to make connections between any representations and the story problem and ask questions about how the selected student found the answer.
Lesson 4: Center Day 1 (Optional)

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.B.2

Teacher-facing Learning Goals
• Add and subtract within 100.

Student-facing Learning Goals
• Let’s play games to practice adding and subtracting.

Lesson Purpose
The purpose of this lesson is for students to practice addition and subtraction within 100 that does not require composing or decomposing a ten.

This lesson is optional because it is an opportunity for extra practice that not all classes may need. Students learn new stages of centers that were introduced in grade 1. In Activity 1, students learn stage 3 of the Capture Squares center. In this new stage, called Add within 20, students find the value of sums within 20. In Activity 2, students learn stage 6 of the Five in a Row center. In this stage, students practice finding the value of sums within 100 that require composing when adding by place.

Instructional Routines
Number Talk (Warm-up)

Materials to Gather
• Colored pencils or crayons: Activity 1
• Number cards 0–10: Activity 1
• Paper clips: Activity 1, Activity 2
• Two-color counters: Activity 2

Materials to Copy
• Capture Squares Stage 3 Gameboard (groups of 2): Activity 1
• Capture Squares Stage 3 Spinner (groups of 2): Activity 1
• Five in a Row Addition and Subtraction Stage 6 Gameboard (groups of 2): Activity 2

Lesson Timeline

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<tr>
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</tbody>
</table>

Teacher Reflection Question
Identify ways the math community you are working to foster is going well. What aspects would you like to work on? What actions can you take to improve those areas?
Lesson Synthesis 10 min

Warm-up

Number Talk: Subtract 2 Digits

Standards Alignments

Addressing 2.NBT.B.5

This Number Talk encourages students to think about how to use the addition and subtraction facts they know and their understanding of place value to mentally find values of expressions. The strategies elicited here will be helpful as students use the facts they know to develop fluency with addition and subtraction within 100.

Students may notice that calculating $6 - 3$ is repeated in each expression and use this to mentally find the values (MP8). Students must also attend to precision in how they describe how they use known facts or other methods (MP6), especially when they describe subtracting by place. Encourage students to tell more about their strategy if they use unclear language to describe their method and to reflect on how their description could be interpreted differently without more precise language. For example, if students say they knew $66 - 30 = 36$ because they know $6 - 3$, ask students to explain how that fact helped them subtract.

Instructional Routines

Number Talk

Student-facing Task Statement

Find the value of each expression mentally.

- $6 - 3$
- $66 - 3$
- $66 - 30$
- $66 - 33$

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
Student Responses

- 3: I know $6 - 3 = 3$.
- 63: I know $6 - 3 = 3$. $60 + 3 = 63$.
- 36: I know $6 - 3 = 3$. 6 tens – 3 tens = 3 tens. $30 + 6 = 36$.
- 33: It’s like the last two expressions together. I did 6 tens – 3 tens = 3 tens and 6 ones – 3 ones = 3 ones. 3 tens and 3 ones is 33.

Activity

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

Synthesis

- “How is each expression like $6 - 3$? How are the expressions different?” (Each expression has the digits 6 and 3. In each expression you could use what you know about $6 - 3$. Some expressions you are finding 6 ones — 3 ones. In some expressions you are finding 6 tens — 3 tens.)

Activity 1

Introduce Capture Squares, Add within 20

Standards Alignments

Addressing 2.OA.B.2

The purpose of this activity is for students to learn stage 3 of the Capture Squares center. Capture Squares was introduced in grade 1. In this stage, students spin to get a number (6–10) and flip a card (0–10) and find the value of the sum. The spinner includes a wild space where students can choose their own number. They find the value of the sum on the game board and connect 2 dots that are adjacent to the number. If that line closes the square, they capture it and shade it in their color. The player to shade in 3 squares first is the winner.

Materials to Gather

Colored pencils or crayons, Number cards 0–10, Paper clips

Materials to Copy

Capture Squares Stage 3 Gameboard (groups of 2), Capture Squares Stage 3 Spinner (groups of 2)

Launch

- Groups of 2
Give each pair of students a copy of the game board, the spinner and a paper clip, a set of cards, and access to crayons or colored pencils.

“We are going to play a game.”

Spin the spinner and draw a card.

“How could I find the value of the sum of these two numbers?”

30 seconds: quiet think time

1 minute: partner discussion

Share responses.

Use a suggested method or select a volunteer to show how to find the value.

“Now, I find the square that has the value of my sum. I draw a line connecting two dots on that square.”

“If the spinner lands on the wild space, you can pick any number to be one of your addends.”

Repeat 1–2 more times, as needed.

“If I draw the line that completes the square, I shade in that square with my color. The first player to shade in 3 squares is the winner.”

**Activity**

12 minutes: partner work time

Monitor for a variety of student strategies to share in the synthesis.

**Synthesis**

Invite selected students to share their strategies.

“When the spinner landed on the wild spot, how did you decide what number to pick?”
Activity 2

Introduce Five in a Row, Add within 100 with Composing

Standards Alignments
Addressing  2.NBT.B.5

The purpose of this activity is for students to learn stage 6 of the Five in a Row center. Five in a Row was introduced in grade 1. In this stage, students add within 100 including sums that require composing a ten when adding by place. Partner A chooses two numbers and places a paper clip on each number. They add the numbers and place a counter on the sum. Partner B moves one of the paper clips to a different number, adds the numbers, and places a counter on the sum. Students take turns moving one paper clip, finding the value of the sum, and covering it with a counter. The winner is the first one to get five counters in a row.

Materials to Gather
Paper clips, Two-color counters

Materials to Copy
Five in a Row Addition and Subtraction Stage
6 Gameboard (groups of 2)

Launch
- Groups of 2
- Give each group a gameboard, 2 paper clips, and two-color counters.
- "We are going to learn a game called Five in a Row. Let's play a round together."
- Display the game board.
- "First I need to pick two numbers to add from the grey rows. I put a paper clip on one number in the top row and one number in the bottom row. Then I add them together."
- Pick two numbers and add them.
- "The value of my sum is ____. Now I look for the number on the gameboard and cover it with a counter. Then it is my partner's turn."
- "My partner can only move one of the paper clips. Then they must find the sum of the two numbers. When they find the sum, they put a counter on the sum. The winner is the first one to get five counters in a row."
numbers.”

- If needed, select a student volunteer to be Partner B to show the steps.
- “Before you begin, you and your partner need to decide who will use the red side of the counters, and who will use the yellow side. Then take turns moving one paper clip and adding the numbers. The first person to get five counters in a row on the game board wins. The counters can be in a row across, up and down, or diagonal.”

**Activity**

- 12 minutes: partner work time

**Synthesis**

- Display a game board with the center column covered with red counters except for the 33 at the bottom.
- Show that one paper clip is on 8.
- “This is my game board. Where would you put the other paper clip? (I would put it on 25 since $25 + 8 = 33$ and then you could cover the last number in the column and have five in a row.)

**Lesson Synthesis**

“Today, we played games that helped us practice adding within 100.”

“How did you and your partner work together during centers? What went well? What can we continue to work on?”
Section B: Decompose to Subtract

Lesson 5: Subtract Your Way

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.B.2

Teacher-facing Learning Goals
- Subtract a one-digit number from a two-digit number in a way that makes sense to them.

Student-facing Learning Goals
- Let’s subtract one-digit numbers from two-digit numbers.

Lesson Purpose

The purpose of this lesson is for students to subtract a one-digit number from a two-digit number and describe decomposing a ten when subtracting by place.

In grade 1, students added within 100 using strategies based on place value and properties of operations. When using place value strategies to add, students learned that sometimes they need to compose a ten. To this point, when subtracting within 20, students used methods like counting on, decomposing a number to get to a ten, and using known addition facts, but did not explicitly decompose a ten.

In this lesson, students subtract a one-digit number from a two-digit number when a ten would need to be decomposed if they subtract by place. When subtracting a one-digit number from a two-digit number, students may count back to get to a ten and then count back from there. Although subtracting or counting back in this way is an effective method when subtracting a single-digit number, it is less practical when subtracting two-digit numbers. For this reason, students are encouraged to use cubes and base-ten blocks to help make decomposing a ten visible to all students and prepare students to consider decomposing the minuend in order to subtract by place. For example, $26 = 10 + 16$, so decomposing 26 into 1 ten and 16 ones will be helpful when representing subtraction using base-ten blocks later in this lesson.

Access for:

_students with Disabilities_
- Representation (Activity 2)

_English Learners_
- MLR8 (Activity 2)
Instructional Routines
5 Practices (Activity 1), Number Talk (Warm-up)

Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
- Connecting cubes: Activity 1

Lesson Timeline

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<td>Cool-down</td>
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Teacher Reflection Question
In grade 1, students learn that the two digits of a two-digit number represent amounts of tens and ones. How did the work of today’s lesson build on that understanding?

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

Find the Difference

Standards Alignments
Addressing 2.NBT.B.5

Student-facing Task Statement
Find the value of 75 – 9. Show your thinking.

Student Responses
Sample responses:
- 75 – 5 = 70, 70 – 4 = 66
- 60 + 15 = 75, 15 – 9 = 6, 60 + 6 = 66
- Students draw 7 tens and 5 ones. Students draw to show decomposing one ten and drawing 10 ones. Students cross out 9 ones and label to show the value as 66.
Warm-up

Number Talk: Subtract a Little More

Standards Alignments
Addressing  2.NBT.B.5, 2.OA.B.2

This Number Talk encourages students to think about subtraction with expressions that may require decomposing and to rely on using what they know about place value and counting up or back to mentally solve problems. The strategies elicited here will be helpful later in the lesson when students subtract one-digit numbers from two-digit numbers.

When students notice that they can use the value of previously found expressions to find new values, they look for and make use of structure (MP7). This Number Talk provides opportunities for students to notice they can subtract to get to a ten, then subtract the rest ($17 - 8 = 17 - 7 - 1 = 10 - 1 = 9$).

Instructional Routines

Number Talk

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

- $17 - 7$
- $17 - 8$
- $26 - 6$
- $26 - 8$

Student Responses

- 10: 7 ones $- 7$ ones is 0 ones. So $17 - 7 = 10$.
- 9: it's like $17 - 7$, but take away 1 more. $10 - 1 = 9$.
- 20: I took away the ones first, 6 ones minus 6 ones is 0 ones. So $26 - 6 = 20$.

Launch

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

Activity

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

Synthesis

- “How could you use the third expression to help you find the difference of the last expression?” (I know that taking away 6 gets me to 20, then I just took 2 more away.)
Activity 1

How Do You Find the Value?

Standards Alignments
Addressing 2.NBT.B.5

The purpose of this activity is for students to subtract in a way that makes sense to them. Students use a method of their choice and share their methods with one another. This can serve as a formative assessment of how students approach finding the value of a difference when a ten must be decomposed when subtracting by place. Although students may use many methods to subtract, including those based on counting or compensation, the synthesis focuses on connecting these methods to those based on place value where a ten is decomposed.

Monitor and select students with the following methods to share in the synthesis:

- Uses connecting cubes to make 82 and removes 9 blocks. Counts back or counts all to find the difference.
- Subtracts 2 from 82 to get to a ten, 80, and then subtracts 7 from 80 by counting back (with or without blocks).
- Uses base-ten blocks to show 82 and decomposes a ten to get 12 ones. Subtracts 9 ones from 12 ones and counts the remaining blocks.

Instructional Routines

5 Practices

Materials to Gather

Base-ten blocks, Connecting cubes

Student-facing Task Statement

Find the value of 82 – 9.

Show your thinking. Use blocks if it helps.

Student Responses

Sample responses:

Launch

- Groups of 2
- Give students access to connecting cubes and base-ten blocks.

Activity

- “Find the difference for 82 – 9.”
• \(82 - 2 = 80, 80 - 7 = 73\)
• \(82 - 10 = 72, 72 + 1 = 73\)

- “Show your thinking using drawings, numbers, or words.”
- “Be prepared to share your thinking.”
- As student work, consider asking:
  ○ “What did you do first? Why?”
  ○ “What did you take away first? Why?”
  ○ “How did you show 82 at first? Did you have to make any changes to take away? Explain.”
  ○ “What tool did you use? Why?”

**Synthesis**

- Ask selected students to share in the given order.
- “Why did _____ need to change 82 to 7 tens and 12 ones to subtract ones from ones?” (There are too many ones to take away, so she traded a ten for 10 ones to show decomposing a ten.)

---

**Activity 2**

Subtract with Base-ten Blocks

**Standards Alignments**

Addressing 2.NBT.B.5

The purpose of this activity is for students to subtract a one-digit number from a two-digit number. In the previous activity, students shared many ways to subtract including using connecting cubes or base-ten blocks to show decomposing a ten. They build on this understanding as they use base-ten blocks to represent the starting number and subtract an amount that requires them to decompose a ten.
Access for English Learners

MLR8 Discussion Supports. Synthesis: Display sentence frames to support students with preparing to explain their thinking in the whole-class discussion. “First, I ___ because . . . .” “I noticed ___ so I . . . .” If necessary, revoice student ideas to demonstrate mathematical language, and invite students to chorally repeat phrases that include relevant vocabulary in context.

Advances: Speaking, Conversing

Access for Students with Disabilities

Representation: Internalize Comprehension. Synthesis: Invite students to identify which details they think are important to remember. Use the sentence frame: “The next time I subtract, I will know that I need to decompose a ten when . . . .”

Supports accessibility for: Conceptual Processing, Memory

Materials to Gather

Base-ten blocks

Student-facing Task Statement

1. Diego started with 5 tens and 5 ones.
   Represent Diego’s blocks with the base-ten blocks.

   How many does he have?

2. Diego took away 2 tens.

   a. Draw a representation to show what happened to Diego’s blocks.
   b. Write an equation to show how many Diego has now.

3. Then, Diego took away 8 ones.

   a. Draw a diagram to show what happened to Diego’s blocks.
   b. Write an equation to show how many Diego has now. Be prepared to explain your reasoning.

Student Responses

1. 55

Launch

- Groups of 2
- Give each group access to base-ten blocks.

Activity

- “Diego was representing numbers using base-ten blocks. Work with a partner to follow along and see what Diego discovered.”
- “Use your blocks first to show what Diego does. Then answer any questions.”
- 8 minutes: partner work time
- Monitor for students who talk about “exchanging” or “trading” a ten for ten ones.

Synthesis

- “What did you need to do with the blocks when Diego took away 8 ones?”
- Select previously identified students to
2. a. Sample response: Students draw 5 tens and 5 ones and cross out 2 tens.
b. \(55 - 20 = 35\)

3. a. Sample response: Students draw 3 tens and 5 ones. They draw to show decomposing 1 ten into 10 ones and cross out 8 ones.
b. \(35 - 8 = 27\)

**Advancing Student Thinking**

Some students may get the ones they need, but also keep the ten. Consider asking:

- “Why did you add 10 ones to Diego’s blocks?”
- “What is the value of the blocks now?”
- “When you decompose a tower of ten, what happens to the tower? How could you show this with the base-ten blocks?”

**Lesson Synthesis**

“In this lesson, we learned that we can decompose a ten into 10 ones to subtract. We used towers of ten and base-ten blocks and drew base-ten diagrams to represent decomposing a ten.”

Write \(35 - 8\).

Display 35 using blocks as 3 tens and 5 ones and 2 tens and 15 ones.

\[35 = 20 + 15\]

“How could representing 35 the second way help us find the difference?” (We have enough ones to take away 8.)
**Suggested Centers**

- Capture Squares (1–3), Stage 3: Add within 20 (Addressing)
- Five in a Row: Addition and Subtraction (1–2), Stage 6: Add within 100 with Composing (Addressing)

---

**Complete Cool-Down**

**Response to Student Thinking**

Students use base-ten blocks and show they know they need to decompose a ten to subtract enough ones, but find a value other than 66 (for example, 76).

**Next Day Support**

- During the launch of the first activity, use base-ten blocks to show 75 – 9 by starting with 7 tens and 5 ones. Add 10 ones to your blocks and then subtract 9 ones. Invite students to agree or disagree with your method and whether your blocks show the value of 75 – 9.
Lesson 6: Compare Methods for Subtraction

Standards Alignments
Addressing 2.NBT.B.5

Teacher-facing Learning Goals
- Describe how methods of subtraction are the same and different when subtracting a one-digit number from a two-digit number.

Student-facing Learning Goals
- Let’s compare subtraction methods.

Lesson Purpose
The purpose of this lesson is for students to compare methods for subtracting a one-digit number from a two-digit number with and without decomposing a ten.

In the first activity, students consider 3 methods for finding the difference represented using base-ten diagrams. In the second activity, students find the difference with and without decomposing a ten and represent their thinking using base-ten diagrams, words, or equations. Students are not expected to draw their work with base-ten diagrams in a specific way. Students should have access to base-ten blocks throughout the lesson and the cool-down. Students compare their methods, and the teacher records student thinking using base-ten diagrams and equations in the activity synthesis. In the lesson synthesis, students consider different ways to represent decomposing.

Access for:

Students with Disabilities
- Representation (Activity 1)

Instructional Routines
MLR2 Collect and Display (Activity 1), True or False (Warm-up)

Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
- Number cards 0–10: Activity 2

Materials to Copy
- Target Numbers Stage 4 Recording Sheet (groups of 1): Activity 2
**Lesson Timeline**

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**Teacher Reflection Question**

In upcoming lessons, students will subtract two-digit numbers from two-digit numbers with and without decomposing a ten. What do students need to understand about place value in order to use strategies that would require decomposing when subtracting by place?

---

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

Mai’s Method

**Standards Alignments**

Addressing  
2.NBT.B.5

**Student-facing Task Statement**

Mai was asked to find the difference for 52 — 7. She started, but she got stuck. Finish Mai's method.

![Diagram](image)

**Student Responses**

Sample response:

- Students draw to show decomposing a ten into 10 ones. Students cross out 5 more ones.
- \[ 52 - 2 = 50 \]
- \[ 50 - 5 = 45 \]
Warm-up

True or False: How many Tens? How many Ones?

 Standards Alignments
Addressing 2.NBT.B.5

The purpose of this True or False is to elicit the ways students notice and explain why the value of an expression doesn't change when the total number of tens and ones stays the same (MP8). Student reasoning here helps deepen their understanding of the base-ten structure of numbers and the properties of operations (MP7). It will also be helpful later when students decompose a ten when subtracting by place.

Instructional Routines

True or False

Student-facing Task Statement

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $64 = 60 + 4$
- $64 = 50 + 14$
- $64 = 30 + 24$

Student Responses

- True: 6 tens is 60 and 4 tens is 4.
- True: there are still 6 tens in all and 4 ones.
- False: 30 is 20 less than 50, but 24 is only 10 more than 14.

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 strategy.
- Repeat with each statement.

Synthesis

- “What pattern did you notice?” (When the first addend went down by 10, the second addend went up by ten, so the sum stayed the same.)
- Consider asking, “How could the second problem help you think about the third one?” (30 is 20 less than 50, but 24 is only 10 more than 14 so the sum had to be different from the second problem.)
Activity 1
Different Ways to Decompose

Standards Alignments
Addressing 2.NBT.B.5

The purpose of this activity is for students to interpret and compare representations that show decomposing a ten to subtract by place. One student shows decomposing a ten by crossing off a ten and drawing 10 ones. The other representation shows a student who begins their drawing with a ten decomposed into 10 ones. Students compare and make connections between the representations and a set of equations that also shows how to find the value of the difference (MP3).

This activity uses MLR2 Collect and Display. Advances: conversing, reading, writing

Access for Students with Disabilities

Representation: Internalize Comprehension. Invite students to identify which details were most useful from each strategy to solve the problem. Display the sentence frame, “The next time I have a subtraction task, I will look for . . . .” Encourage decomposition, drawing pictures or using manipulatives as the main strategies.
Supports accessibility for: Attention, Memory

Instructional Routines
MLR2 Collect and Display

Materials to Gather
Base-ten blocks

Student-facing Task Statement
Diego and Elena drew base-ten diagrams to find the value of 82 — 9.

Diego  Elena

Launch
• Groups of 2
• Give students access to base-ten blocks.

Activity
• “Diego and Elena drew base-ten diagrams
1. Compare Diego’s work to Elena’s.
   a. What is the same?
   b. What is different?

2. Tyler used equations to show his thinking.
   \[82 - 9\]
   \[82 = 70 + 12\]
   \[12 - 9 = 3\]
   \[70 + 3 = 73\]

   Diego says Tyler’s work matches his diagram.
   Elena says Tyler’s work matches her diagram.

   Who do you agree with? Explain.

**Student Responses**

1. a. Sample responses:
   - They both used base-ten diagrams.
   - They both got 73 as the difference.

   b. Sample responses:
   - They did not show 82 the same way.
   - Elena used 7 tens and 12 ones, but Diego showed 8 tens and 2 ones and broke apart a ten.

2. Sample responses:
   - I agree with Diego. Diego’s diagram shows decomposing a ten so it shows \[82 = 70 + 12\].
   - I agree with Elena. Elena’s diagram shows she thought of 82 as 7 tens to find the value of \[82 - 9\].
   - “Think about what is the same or different on your own. Then, discuss your ideas with your partner.”
   - 1 minute: quiet think time
   - 2-3 minutes: partner discussion

**MLR2 Collect and Display**

- Circulate, listen for, and collect the language students use to describe the diagrams and how the ten is decomposed. Listen for: break apart a ten, decompose, tens, need more ones.
- Record students’ words and phrases on a visual display and update it throughout the lesson.
- Share responses. Consider asking:
  - “Did Diego and Elena find the same value for \[82 - 9\]? How do you know?”
  - “What is the difference between their diagrams?”

- “Tyler found the value by using equations. Diego says Tyler’s equations match his diagram. Elena says the equations match her diagram. Who do you agree with?”
- 2 minutes: independent work time
- 4 minutes: partner discussion
- Monitor for students who agree with Diego, Elena, or both and can explain their reasoning with connections to the diagrams.

**Synthesis**

- Invite previously identified students to share.
- “Diego, Elena, and Tyler saw they needed more ones before they could subtract ones from ones. They showed decomposing a ten in different ways.”
and 12 ones and then she showed subtraction.

- I agree with both of them. Both showed decomposing 82 and making 12 ones. They both subtracted 12 - 9.

- Display the list of words and phrases recorded during the activity.
- “Here are some of the words we used to describe subtracting by place.”
- “Are there any other words or phrases that are important to include on our display?”
- As students share responses, update the display, by adding (or replacing) language, diagrams, or annotations.
- Remind students to borrow language from the display as needed.

**Advancing Student Thinking**

Some students may only recognize 82 as 8 tens and 2 ones. Consider asking:

- “What was the value of Elena’s blocks before she started subtracting? Explain.”
- “How could you make 82 with base-ten blocks if you only had 7 tens?” Allow students to share how they could represent 82 with 7 tens and 12 ones.

**Activity 2**

Introduce Target Numbers, Subtract Tens or Ones

**Standards Alignments**

Addressing 2.NBT.B.5

The purpose of this activity is for students to subtract numbers within 100 with and without decomposing a ten. Students learn stage 4 of the Target Numbers center, which was introduced in grade 1. For the introduction of this stage, have students start at 99 and subtract tens or ones to get as close to 0 as possible. Students start by representing 99 with base-ten blocks and then take turns flipping a number card and choosing whether to subtract that number of tens or ones and write an equation. The value of the difference becomes the first number in the next equation. The player who gets closest to 0 in 6 rounds, without going below 0, is the winner.
**Materials to Gather**

Base-ten blocks, Number cards 0–10

**Materials to Copy**

Target Numbers Stage 4 Recording Sheet (groups of 1)

**Required Preparation**

- Remove 0 and 10 from each set of cards (or prompt students to remove them) before the activity.

**Launch**

- Groups of 2
- Give each student a copy of the recording sheet and a set of the number cards.
- “We are going to learn a new way to play Target Numbers. You and your partner will start with 99 and race to see who can get closest to 0.”
- “First, represent 99 with base-ten blocks. When it’s your turn, draw a card. Decide whether you want to subtract that many tens or that many ones. Then show the subtraction with your blocks and write an equation on your recording sheet.”
- “Take turns drawing a card and subtracting until you play 6 rounds or one player reaches 0. After 6 rounds, whoever is closest to 0 is the winner.”
- As needed, demonstrate a round with a student volunteer.

**Activity**

- 10–15 minutes: partner work
- Monitor for examples when students draw cards that require them to decompose a ten to subtract by place.

**Synthesis**

- Invite 2–3 previously identified students to share how they decomposed a ten to subtract by place.
As needed, record the student examples using base-ten diagrams.

Keep the diagrams displayed.

“What is the same and what is different about how the ten was decomposed in each of these examples?”

Consider asking:

○ “Why did you choose to subtract ____ ones instead of ____ tens?”

○ “Why did you have to decompose a ten?”

○ “What equation did you write to show your subtraction?”

○ “How can you tell by looking at the equation that you would need to decompose a ten?”

Lesson Synthesis  

10 min

“Today we compared methods for subtracting and representations for showing our thinking when subtracting.”

“What are different methods you could use to find the value of 50 – 7?” (I could use base-ten blocks to show 4 tens and 10 ones and take away 7 ones. I could draw 5 tens and then decompose 1 ten.)

Suggested Centers

- Capture Squares (1–3), Stage 3: Add within 20 (Addressing)

- Five in a Row: Addition and Subtraction (1–2), Stage 6: Add within 100 with Composing (Addressing)
Response to Student Thinking

Students show how Mai could decompose 1 ten, but cross out 7 more ones to find the value as 43.

Next Day Support

- Before the warm-up, have students use base-ten blocks to represent Mai's work. Ask students to summarize what Mai had done before she got stuck, and what she has left to do.
Lesson 7: Subtract Two Digits

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.6, 2.NBT.B.9
Building Towards 2.NBT.B.5

Teacher-facing Learning Goals
● Subtract a two-digit number from a two-digit number in a way that makes sense to them.

Student-facing Learning Goals
● Let's subtract with two-digit numbers.

Lesson Purpose
The purpose of this lesson is for students to subtract a two-digit number from a two-digit number when a ten is decomposed when subtracting by place.

In previous lessons, students learned that decomposing a ten is sometimes necessary when subtracting two numbers. Students used connecting cubes and base-ten blocks to represent their methods when subtracting a one-digit number from a two-digit number.

In the first activity, students use methods that make sense to them to subtract and compare their methods with a partner. In the activity synthesis, students make connections across different methods and representations and consider which tools and representations work best for them. In the second activity, students use base-ten blocks to represent expressions and decompose a ten when subtracting by place.

Students should have access to connecting cubes and base-ten blocks throughout the lesson and the cool-down.

Access for:

Students with Disabilities
● Representation (Activity 1)

Instructional Routines
How Many Do You See? (Warm-up), MLR8 Discussion Supports (Activity 1)
Materials to Gather

- Base-ten blocks: Activity 1, Activity 2
- Connecting cubes: Activity 1

Materials to Copy

- Using Blocks to Take Away (groups of 4): Activity 2

Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
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<tbody>
<tr>
<td>Warm-up</td>
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<td>Activity 2</td>
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<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

How are base-ten blocks and diagrams supporting students in showing what they understand about decomposing a ten when subtracting by place?

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

Decompose to Subtract

Standards Alignments

Addressing 2.NBT.B.5

Student-facing Task Statement

Find the value of 61 – 32. Show your thinking. Use blocks if it helps.

Student Responses

29. Sample responses:

- Students draw 6 tens and 1 one. They draw to show decomposing a ten into 10 ones and cross out 3 tens and 2 ones.
- Students draw 5 tens and 11 ones and cross out 3 tens and 2 ones.
How Many Do You See: Compose a Ten

Standards Alignments
Building Towards 2.NBT.B.5

The purpose of this How Many Do You See is to build on what students know about place value to make sense of visual representations of two-digit numbers. When students describe how many they see by grouping tens with tens and ones with ones or composing a ten, they show how they look for and make use of base-ten structure (MP7). This will be helpful when students use base-ten representations to compose and decompose a ten during the lesson.

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?”
- Display 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
- “Which two images have the same value? How do you know?”(The first image and the second image both have the same amount. The first one shows 5 tens and 5 ones. I know Image 2 is the same because I know 2 groups of 5 is the same as 1 ten. So it's the same as 5 tens and 5 ones.)
Student Responses

Sample responses:

- 55. I see 5 tens and 5 ones.
- 55. I see 4 tens and 15 ones. 10 ones is the same as 1 ten, so there are 5 tens and 5 ones.
- 24. I see 2 tens and 4 ones.
- 44. I see 3 tens and 14 ones.

Activity 1

What's the Difference?

Standards Alignments

Addressing 2.NBT.B.5, 2.NBT.B.9

The purpose of this activity is for students to subtract a two-digit number from a two-digit number in a way that makes sense to them. Students build on their understanding of decomposing a ten when subtracting a one-digit number from a two-digit number to subtract two-digit numbers. The synthesis is devoted to presenting and comparing techniques students use to find the difference, including diagrams and equations (MP3).

This activity uses MLR8 Discussion Supports. Advances: listening, speaking, conversing

Access for Students with Disabilities

Representation: Develop Language and Symbols. Synthesis: Make connections between representations visible. Ask students to verbalize the connection between the expression and the blocks.

Supports accessibility for: Visual-Spatial Processing, Language, Memory
Instructional Routines
MLR8 Discussion Supports

Materials to Gather
Base-ten blocks, Connecting cubes

Student-facing Task Statement
Find the value of each difference. Show your thinking. Use blocks if it helps.

1. \(46 - 28 = \) ____
2. \(93 - 54 = \) ____

Student Responses
1. \(46 - 28 = 18\)
   Sample response:
   \(40 - 20 = 20\)
   \(26 - 6 = 20\)
   \(20 - 2 = 18\)
2. \(93 - 54 = 39\)
   Sample response:
   \(93 = 80 + 13\)
   \(80 - 50 = 30\)
   \(13 - 4 = 9\)
   \(30 + 9 = 39\)

Launch
- Groups of 2
- Give students access to connecting cubes and base-ten blocks.

Activity
- “Find the value of each difference and share your method and solution with your partner."
- 7 minutes: independent work time

MLR8 Discussion Supports
- “After your partner shares their method, repeat back what they told you.”
- Display the sentence frames:
  - “I heard you say . . . .”
  - “Our methods are alike because . . . .”
  - “Our methods are different because . . . .”
- 5 minutes: partner discussion
- Monitor for students who use base-ten blocks to show decomposing a ten.

Synthesis
- Invite previously identified students to share.
- “What did ___ do to solve the problem? How can we record it?”
- 30 seconds: quiet think time
Share responses.

Show how to represent solving with base-ten blocks with drawings and equations.

“How are these representations like the way ___ used base-ten blocks to find the value of the difference? How are they different?”

**Advancing Student Thinking**

Some students may not use base-ten blocks to find the difference. Prompt them to show their thinking in a way that could help others understand. Ask them to write expressions to show the steps they took when appropriate. Consider asking:

- “How did you find the value of the difference?”
- “What could you add to your diagram to help your partner understand what you did?”
- “How could you use equations to show the steps you used?”

**Activity 2**

**Use Blocks to Take Away**

**Standards Alignments**

Addressing 2.NBT.B.5, 2.NBT.B.6

The purpose of this activity is for students to subtract a two-digit number from a two-digit number. In the first activity, students used any method that made sense to them to find the difference. In this activity, they use base-ten blocks to represent the starting number and subtract amounts that require a ten to be decomposed.

**Materials to Gather**

Base-ten blocks

**Materials to Copy**

Using Blocks to Take Away (groups of 4)
Required Preparation

- Create a set of cards from the Instructional master for each group of 4.

Student-facing Task Statement

1. Choose a player card. Mix up the other cards and put them face down.
   
   Player name: ______________________

2. Represent your starting number with base-ten blocks.
   
   Starting number: _______________

3. Take turns picking a card. Read the card to the group.

4. Listen for your player's name. Use the blocks to show the change.

5. Explain your thinking to your group.

6. Write an equation to show the new number.
   
   Equation 1: ______________________
   Equation 2: ______________________
   
   My player now has ________ tens and ________ ones.

   Ending number: ___________________

   Share this number with your group.

7. Write an equation to show the sum of the ending numbers in your group.

Student Responses

Sample response:
Player Name: Han
Starting number: 62
Equation 1: 62 – 15 = 47
Equation 2: 47 – 28 = 19
My player now has 1 ten and 9 ones.
Ending number: 19
Group total: 19 + 18 + 18 + 26 = 81

Launch

- Groups of 4
- Give each group a set of cards and access to base-ten blocks.

Activity

- “Now you are going to play a card game using base-ten blocks.”
- “First, each member of your group will choose a different player card, Diego, Lin, Jada, or Han.”
- “Write down the name you picked. Mix up the other cards and put them face down.”
- “Now you each have a player and your starting number.”
- “Use the blocks to represent your starting numbers.”
- 2 minutes: group work
- Guide students through the rest of the steps:
  - “Take turns picking a card and read the card to the group.”
  - “Listen for your player's name and follow the directions on the card.”
  - “Share your thinking while your group members listen. Write an equation to show the new number.”
  - “Before picking a new card, make sure your group works together to agree on the new number.”
  - “You will keep playing until all of the cards have been read. Your player's number should change two times.”
- 15 minutes: group work time
- Monitor for students who:
Lesson Synthesis

“Today you used different methods to subtract 2 two-digit numbers.”

“You solved in ways that make sense to you and you used base-ten blocks to take away different amounts.”

“How was subtracting a two-digit number from a two-digit number the same as subtracting a one-digit number from a two-digit number?” (It was the same because we still had to think about subtracting ones. Sometimes you have to decompose a ten if you need more ones.)

"How was it different?" (When you subtract a two-digit number, you have to think about subtracting tens too. The number you are subtracting is bigger because it's a two-digit number.)

"How did working together with a partner or a group help you understand different ways to subtract two-digit numbers?"

Math Community

“The card game required you all to work together. What are some ways your group worked together?” (We helped each other with keeping track of the blocks. We talked about our thinking. We helped each other if someone was stuck or confused.)
Suggested Centers

- Capture Squares (1–3), Stage 3: Add within 20 (Addressing)
- Five in a Row: Addition and Subtraction (1–2), Stage 6: Add within 100 with Composing (Addressing)
- Target Numbers (1–5), Stage 4: Subtract Tens or Ones (Addressing)

Response to Student Thinking

Students find a value other than 29.

Next Day Support

- During the launch of the first activity, invite a student to share how they found the value of 61 – 32 using base-ten blocks. Invite students to compare the value and the method with their own work and make revisions if needed.
Lesson 8: Different Ways to Decompose

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.9

Teacher-facing Learning Goals
- Describe how methods of subtraction are the same and different when subtracting a one-digit number from a two-digit number.

Student-facing Learning Goals
- Let's compare different ways to subtract.

Lesson Purpose
The purpose of this lesson is for students to make sense of different methods for subtracting a two-digit number from a two-digit number and describe how the methods are the same and different.

In previous lessons, students used their own methods for subtracting a two-digit number from a two-digit number. In this lesson, students make sense of different subtraction methods that use base-ten drawings to represent decomposing a ten to subtract by place. Students connect base-ten drawings to equations that represent the steps of a subtraction method. Throughout the lesson, students share claims and justify how methods are the same and how they are different with an emphasis on describing how tens are subtracted from tens and ones from ones and deepening their understanding of the properties of operations (MP3, MP7).

Students should have access to base-ten blocks throughout the lesson and cool-down as they make sense of and try different methods and representations.

Access for:

Students with Disabilities
- Engagement (Activity 1)

English Learners
- MLR8 (Activity 2)

Instructional Routines
Number Talk (Warm-up)

Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
Lesson Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Warm-up</td>
<td>10 min</td>
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<td>Activity 1</td>
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</tr>
</tbody>
</table>

Teacher Reflection Question

What did you say, do, or ask to support students in trying each method for subtracting two-digit numbers from two-digit numbers? What will you do in upcoming lessons to help students make sense of and connect different methods?

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

10 min

Whose Method is it Anyway?

Standards Alignments

Addressing 2.NBT.B.5, 2.NBT.B.9

Student-facing Task Statement

Mai and Lin were asked to find the value of $63 - 18$. Compare their methods.

Mai's Way

Lin's Way

1. Name 1 thing that is the same about Mai and Lin's methods.
2. Name 1 thing that is different about Mai and Lin's methods.

Student Responses

Sample responses:

1. They both used base-ten diagrams and crossed out 18 in all.
2. Lin decomposed a ten while solving, but Mai represented 63 with 5 tens and 13 ones so she
had all the ones she needed.

--- Begin Lesson ---

Warm-up

Number Talk: Multiples of 10

Standards Alignments

Addressing 2.NBT.B.5, 2.NBT.B.9

The purpose of this Number Talk is to elicit the ways students look to add or subtract based on place value. When students describe ways to add or subtract by adding or subtracting tens and tens, they make use of the base-ten structure of the numbers. When they describe ways to use the value of the sums to find the value of the differences, they look for and make use of the structure of expression and the relationship between addition and subtraction (MP7). Both of these understandings help students develop fluency with addition and subtraction within 100.

Instructional Routines

Number Talk

Student-facing Task Statement

Find the value of each expression mentally.

- $18 + 10 + 10$
- $18 + 20 + 10$
- $38 - 20$
- $48 - 30$

Student Responses

- $38: 18 + 10 = 28, 28 + 10 = 38.$
- $48$: it is 10 more than the first one.

Launch

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

Activity

- Record answers and strategy.
- Keep expressions and work displayed.
- Repeat with each expression.
18: 40 – 30 = 10, 10 + 8 = 18.

**Synthesis**

- “How are the addition expressions related to the subtraction expressions?” (The second expression is the opposite of the last expression. They are in the same fact family. The first expression helped me solve the third expression because I know 18 + 20 = 38, so 38 – 20 must be 18.)

---

**Activity 1**

**Aren’t You Missing Something?**

**Standards Alignments**

Addressing 2.NBT.B.5, 2.NBT.B.9

---

The purpose of this activity is for students to analyze two different subtraction methods that are based on place value and connect the methods to equations. In previous lessons, students analyzed base-ten drawings like Lin's where a student recognizes a ten needs to be decomposed before they draw the blocks. Clare's drawing represents a student who mentally subtracts tens from tens before drawing and then considers decomposing units. Students discuss how each method works and deepen their understanding of the properties of operations (MP7).

**Access for Students with Disabilities**

*Engagement: Develop Effort and Persistence.* Check in and provide each group with feedback that encourages collaboration and community. For example, encourage students to take turns sharing their ideas about Lin and Clare's methods and give feedback based on their responses.

*Supports accessibility for: Social-Emotional Functioning*

---

**Materials to Gather**

Base-ten blocks

**Student-facing Task Statement**

Lin and Clare made base-ten diagrams to find the value of 71 – 56.

**Launch**

- Groups of 2
- Give students access to base-ten blocks.
1. What do you notice about their work? What do you wonder?

2. Lin and Clare each wrote equations to show their thinking. Explain how you know which group of equations matches Lin’s work and which matches Clare’s work.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>71 – 50 = 21</td>
<td>71 = 60 + 11</td>
</tr>
<tr>
<td>21 = 10 + 11</td>
<td>11 – 6 = 5</td>
</tr>
<tr>
<td>11 – 6 = 5</td>
<td>60 – 50 = 10</td>
</tr>
<tr>
<td>10 + 5 = 15</td>
<td>10 + 5 = 15</td>
</tr>
</tbody>
</table>

3. How are Lin and Clare’s methods the same? How are they different?

**Student Responses**

1. Answers vary. Sample responses: Lin drew 6 tens and decomposed one ten. Lin crossed out 5 tens and 6 ones. Clare just drew 2 tens and decomposed 1 of them. Clare crossed out 6 ones and the ten she decomposed. Did Clare find 71 – 56? Why did Clare only draw 2 tens?

2. Lin: B, Clare: A.

3. Sample responses: They both decomposed a ten. They both showed subtracting 6 in the diagram. They both subtracted 5 tens. Clare took away 5 tens before she drew and before she decomposed. Then she took away the ones. Lin drew tens and decomposed first, then took away ones, and then tens. They did the same things, just in a different order and drew in different ways.

- “Lin and Clare made base-ten diagrams to find the value of 71 – 56.”
- “What do you notice about their work? What do you wonder?” (Lin drew 6 tens and decomposed one ten. Lin crossed out 5 tens and 6 ones. Clare just drew 2 tens and decomposed 1 of them. Clare crossed out 6 ones and the ten she decomposed. Did Clare find 71 – 56? Why did Clare only draw 2 tens?)
- 1–2 minutes: partner discussion
- Share responses.
- “Do you think Clare found the value of 71 – 56? Why or why not?” (Yes, her diagram shows 15 left. No, she showed 21 – 6. She didn’t represent all the tens.)
- 1 minute: partner discussion
- Share responses.

**Activity**

- “Lin and Clare used equations to show their thinking. Work with your partner to match the equations to Lin’s work and Clare’s work. Then discuss how the methods are the same and how they are different.”
- 5 minutes: partner work time

**Synthesis**

- Invite students to share the group of equations that match Lin’s work and Clare’s work.
- “How are these methods the same?” (They both decomposed a ten. They both showed subtracting 6 in the diagram. They both subtracted 5 tens.)
- “How are the methods different?” (Clare took away 5 tens before she drew and before she decomposed. Then she took away the ones. Lin drew tens and decomposed first, then took away ones, and then tens. They did the same things,
just in a different order and drew in different ways.)

- “Did Clare find the value of 71 — 56? What did you learn about her method?” (Yes, she did because she did take away tens. I learned you can take away tens first and it doesn’t change the difference.)

Activity 2
Different Ways to Decompose

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.9

The purpose of this activity is to analyze a subtraction method that is based on place value and connect it to equations. Students analyze the method and explain why they think it best matches one of the methods they saw in the previous activity. Then they practice subtraction using any method that makes sense to them. Monitor for different methods to share in the synthesis, including students who show ways to subtract ones from ones first and those that subtract tens from tens first.

Access for English Learners

MLR8 Discussion Supports. Synthesis: Revoice student ideas to demonstrate and amplify mathematical language use. For example, revoice the student statement “exchanged ten or traded ten” for “decomposed ten”.

Advances: Speaking, Listening

Materials to Gather
Base-ten blocks

Student-facing Task Statement
Andre found the value of 65 — 28. He made a base-ten diagram and wrote equations to show

Launch
- Groups of 2
- Give students access to base-ten blocks.
1. Do you think Andre's method is more like Clare's or Lin's method? Explain.

2. Find the value of each difference. Show your thinking.
   a. $34 - 18$
   b. $82 - 37$
   c. $71 - 53$

**Student Responses**

1. Answers vary. Sample responses: It's more like Lin's because he drew all the tens first. It's more like Clare's because he took away tens first, he just drew them out.

2. a. 16. Sample response: Students draw 2 tens and 14 ones, then cross out 8 ones and 1 ten.
   b. 45. Sample response: Students draw 5 tens and 2 ones and show decomposing 1 ten for ten ones. Students cross out 7 ones and label to show a difference of 45. (This response is like Clare's method in the previous activity).
   c. 18. Sample response:
      
      $71 - 50 = 21$
      
      $21 - 3 = 18$

- “Andre found the value of $65 - 28$. Take a minute to look at his work.”
- 1 minute: quiet think time
- “Do you think it's more like Clare or Lin's method? Discuss with your partner.” (It's more like Lin's because he drew all the tens first. It's more like Clare's because he took away tens first, he just drew them out.)
- 2-3 minutes: partner discussion
- Share responses.

**Activity**

- “Find the value of each difference. Use any method that makes sense to you. Then share your thinking with your partner.”
- 5 minutes: independent work time
- 2-3 minutes: partner work time

**Synthesis**

- Invite 1-2 students to share their method for each difference.
- Consider asking or inviting peers to ask questions of students who share:
  - “What did you do first?”
  - “Why did you choose this representation?”
  - “How is your method like _____’s method?”
Advancing Student Thinking

- Students may use a method that shows they decompose and subtract by place, but they write a value that does not match the difference. Consider asking:
  - “What did you do first to find the value of ____? Can you show me in your drawing/equations?”
  - “What did you do next?”
  - “How could you use labels or equations to help keep track of your steps?”

Lesson Synthesis

“Today we made sense of and compared different methods for subtracting two-digit numbers.”

Display Lin, Clare, and Andre’s methods or different examples of student work from the last activity.

“How were the methods you saw today the same? How were they different?”

“Which methods make the most sense to you? Explain.”

Suggested Centers

- Capture Squares (1–3), Stage 3: Add within 20 (Addressing)
- Five in a Row: Addition and Subtraction (1–2), Stage 6: Add within 100 with Composing (Addressing)
- Target Numbers (1–5), Stage 4: Subtract Tens or Ones (Addressing)

Response to Student Thinking

Students share something that is the same or something that is different, but not both.

Next Day Support

- Before the warm-up, have students work in groups of 2–4 to list different ways Mai and Lin’s work are the same and ways they are
different.
Lesson 9: Add and Subtract Within 100

Standards Alignments
Addressing 2.NBT.B.5
Building Towards 2.NBT.B.5

Teacher-facing Learning Goals
- Add and subtract within 100 using strategies based on place value, including composing and decomposing a ten, and the properties of operations.

Student-facing Learning Goals
- Let's find the difference in our own way.

Lesson Purpose
The purpose of this lesson is for students to add and subtract within 100, including composing and decomposing a ten, using strategies based on place value and the properties of operations.

In previous lessons, students explored different methods for addition and subtraction with and without composing or decomposing a ten. Students used base-ten blocks, drawings, and equations to represent their methods.

In this lesson, students choose their preferred methods and representations to add and subtract. Throughout the lesson, students are asked to connect expressions and diagrams, choose their own methods for adding and subtracting, and make sense of others thinking (MP2, MP3, MP6). Listen for the ways students explain their methods to others and look for ways to help students provide feedback to one another when their representations or explanations are not clear.

This lesson has a Student Section Summary.

Access for:
- Students with Disabilities
  - Representation (Activity 2)
- English Learners
  - MLR8 (Activity 1)

Instructional Routines
MLR7 Compare and Connect (Activity 2), Which One Doesn't Belong? (Warm-up)
Materials to Gather
- Base-ten blocks: Activity 1, Activity 2

Materials to Copy
- Sort and Find the Value (groups of 2): Activity 1

Lesson Timeline

<table>
<thead>
<tr>
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<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>
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<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 whose thinking was heard today. Reflect on whose thinking was not heard but could have enriched the conversations. What prompts or structures might better enable the latter to share their voices and reasoning?

Cool-down (to be completed at the end of the lesson)
Find the Value Your Way

Standards Alignments
Addressing 2.NBT.B.5

Student-facing Task Statement
Find the value of each expression. Show your thinking. Use blocks if it helps.

1. 95 – 26
2. 28 + 56

Student Responses
1. 69. Sample response:
   95 – 20 = 75
   75 – 5 = 70
   70 – 1 = 69
2. 84. Sample response:
20 + 50 = 70
8 + 6 = 14
70 + 14 = 84

Warm-up

Which One Doesn't Belong: Tens and Ones

Standards Alignments
Building Towards 2.NBT.B.5

This warm-up prompts students to carefully analyze and compare features of base-ten diagrams. In making comparisons, students look for and make use of structure as they describe representations of tens, ones, and the value of the base-ten diagrams (MP7). It gives the teacher an opportunity to hear how students use terminology and talk about characteristics of base-ten diagrams, including equivalent representations (MP6). This will be important as students compose and decompose two-digit numbers as they add and subtract within 100.

Instructional Routines
Which One Doesn’t Belong?

Student-facing Task Statement
Which one doesn't belong?

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

Activity
- “Discuss your thinking with your partner.”
Activity 1

Sort and Find the Value

Standards Alignments
Addressing 2.NBT.B.5

The purpose of this activity is for students to match expressions to base-ten diagrams. Students then choose 2 of the expressions to find the value of, using any method that makes sense to them. Some of the expressions do not require composing or decomposing a ten. When students match expressions with diagrams they are making use of base ten structure and the meaning of operations (MP7).

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.
**Access for English Learners**

*Advances: Conversing, Representing*

---

**Materials to Gather**

- Base-ten blocks

**Materials to Copy**

- Sort and Find the Value (groups of 2)

---

**Required Preparation**

- Create a set of cards from the Instructional master for each group of 2–3.

---

**Student-facing Task Statement**

1. Match each expression to a base-ten diagram.
2. Choose 1 addition expression and find the value of the sum.
3. Choose 1 subtraction expression and find value of the difference.

**Student Responses**

2. Answers vary.
3. Answers vary.

---

**Launch**

- Groups of 2–3
- Give each group a set of cards and access to base-ten blocks.

**Activity**

- “Each group will get a set of cards. Match each expression to a diagram. After you have found a match, explain to your partner why you believe they go together.”
- “After you have found all of the matches, choose 1 addition and 1 subtraction expression. Find the value of each expression in a way that makes sense to you.”
- 15 minutes: partner work time
- Monitor for students who choose expressions that do not involve composing or decomposing a ten.

**Synthesis**

- “Which expressions did you choose to solve? Why?” (I chose 35 + 42 because it was easy for me. I knew that I could just add the ones and then add the tens.)
- “How could you tell if you would need to compose or decompose a ten?” (I could see
that $5 + 2 = 7$, so I knew I wouldn’t need to compose a ten.)

Activity 2
Add or Subtract

Standards Alignments
Addressing 2.NBT.B.5

The purpose of this activity is for students to add and subtract within 100 using the methods that make sense to them. Throughout the activity students share their methods for adding and subtracting and compare their method with others (MP3).

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

Access for Students with Disabilities

Representation: Internalize Comprehension. Synthesis: Invite students to identify which details were most important to solve the problem. Display the sentence frame, “The next time I need to find the value of an expression, I will pay attention to . . . .”

Supports accessibility for: Conceptual Processing, Memory, Language

Instructional Routines
MLR7 Compare and Connect

Materials to Gather
Base-ten blocks

Student-facing Task Statement
Find the value of each expression. Show your thinking. Use blocks if it helps.

1. $27 + 47$
2. $55 - 27$

Launch
- Groups of 2–3
- Give each group access to base-ten blocks.
3. 36 + 38  
4. 82 − 39

**Student Responses**

1. 74. Sample response: 20 + 40 = 60, 7 + 7 = 14, 60 + 14 = 74  
2. 28. Sample response: 55 − 20 = 35, 35 − 5 = 30, 30 − 2 = 28  
3. 74. Sample response: 36 + 30 = 66, 66 + 4 + 4 = 74  
4. 43. Sample response: 82 − 30 = 52, 52 − 2 = 50, 50 − 7 = 43

**Activity**

- “Find the value of each expression. Show your thinking using drawings, numbers, or words.”  
- “You can use the base-ten blocks if they help. Make sure you show your thinking on paper.”  
- 5 minutes: independent work time

**MLR7 Compare and Connect**

- “Now, talk with your group about how you found the value of the expressions. What is the same? What is different?”  
- “Create a visual display that shows your thinking about 1 of the expressions. Show the work of all of the group members for the same expression so others can look for things that are the same or different. You may want to include details such as notes, diagrams, drawings, etc. to help others understand your thinking.”  
- 5 minutes: partner discussion

**Synthesis**

- 5–7 minutes: gallery walk  
- “What was the same about how ____ found the value and ____ found the value?” (In the first problem, ____ and ____ both added the ones and then added the tens and combined the two sums. 7 + 7 = 14, 20 + 40 = 60, 14 + 60 = 74)  
- “What is different about how ____ represented their thinking and ____ represented theirs?” (____ used a diagram and crossed out the ones and then decomposed a ten. Then ____ crossed out the rest of the ones and the tens. ____ wrote equations to show each step.)
Advancing Student Thinking

Students may not see the connections between their methods and other students’ methods. Consider asking:

- “How are the methods represented differently in each display?”
- “How did each group find the same value when they used such different methods?”

Lesson Synthesis

“In this unit, you added and subtracted within 100 using different methods, tools, and representations.”

“What is something new you’ve learned about addition or subtraction?”

“What is something new you’ve learned about ways to add or subtract from another classmate?”

Suggested Centers

- Capture Squares (1–3), Stage 3: Add within 20 (Addressing)
- Five in a Row: Addition and Subtraction (1–2), Stage 6: Add within 100 with Composing (Addressing)
- Target Numbers (1–5), Stage 4: Subtract Tens or Ones (Addressing)

Student Section Summary

In this section, we practiced subtracting two-digit numbers. We learned that when there are not enough ones to subtract by place, you can decompose 1 ten for 10 ones. We used base-ten blocks and base-ten diagrams to show our thinking.

63 – 18
Response to Student Thinking

Students find a value of $95 - 26$ other than 69.

Students find a value for $28 + 56$ other than 84.

Next Day Support

- Launch the warm-up or activities by highlighting important representations from previous lessons.
Lesson 10: Center Day 2 (Optional)

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.9, 2.OA.B.2

Teacher-facing Learning Goals
- Add and subtract within 100.

Student-facing Learning Goals
- Let's play games to practice adding and subtracting.

Lesson Purpose
The purpose of this lesson is for students to practice adding and subtracting within 100 using methods based on place value understanding, the properties of operations, and the relationship between addition and subtraction.

This lesson is optional because it is an opportunity for extra practice with addition and subtraction within 100 that not all classes may need. In Activity 1, students learn stage 5 of the Target Numbers center which was introduced in a previous lesson. In this new stage, called Subtract Two-digit Numbers, students roll number cubes to create two-digit numbers from a starting number to get as close to 0 as possible. In Activity 2, students chose to continue working on Subtract Two-digit Numbers, or choose between two previously introduced centers focused on addition and subtraction within 20.

As needed, revisit and reinforce the structures and norms for centers that were established in previous lessons.

Instructional Routines
Notice and Wonder (Warm-up)

Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
- Materials from previous centers: Activity 2
- Number cubes: Activity 1, Activity 2

Materials to Copy
- Target Numbers Stage 5 Recording Sheet (groups of 1): Activity 1

Lesson Timeline

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

Teacher Reflection Question
As students worked together today, where did you see evidence of the mathematical community established over the course of the school year?
Warm-up

Notice and Wonder: Compare the Representations

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.9

The purpose of this warm-up is for students to interpret and connect base-ten diagrams and equations and describe how they work. This will be useful when students choose their own representations and methods for subtraction during center activities. Although students may notice and wonder many things about these representations, connections to how the representations show subtracting tens from tens and ones from ones are the important discussion points. As they compare the representations, students develop their skill with place value and operation language (MP6).

Instructional Routines

Notice and Wonder

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

A.

Launch

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

Activity

- “Discuss your thinking with your partner.”
- 1 minute: partner discussion
- Share and record responses.
16 – 8 = 8
50 – 20 = 30
30 + 8 = 38
66 – 28 = 38

**Student Responses**

Students may notice:

- A uses base-ten diagrams and some numbers.
- B uses only equations.
- Both representations show a difference of 38.
- Both representations show decomposing a ten.
- Both representations show subtracting 2 tens and 8 ones.

Students may wonder:

- I wonder if both representations show 66 – 28?
- I wonder if A shows taking away tens first or ones first.

**Synthesis**

- “Both of these representations show ways to find the value of 66 – 28. How are they the same? How are they different?” (Both show taking tens from tens and ones from ones. Both show decomposing a ten. One uses base-ten diagrams and one uses only numbers and equations.)

---

**Activity 1**

Introduce Target Numbers, Subtract Two-digit Numbers

**Standards Alignments**

Addressing 2.NBT.B.5

The purpose of this activity is for students to learn stage 5 of the Target Numbers center. Students subtract two-digit numbers to get as close to 0 as possible. For the introduction of this stage, invite students to count by 10 to 100 and represent their count with base-ten blocks. Then, they take turns rolling the 3 cubes to get a number to subtract. They choose one of the numbers on the cubes to represent the tens and a different number to represent the ones. Students subtract their tens and ones from the starting number. The difference becomes the first number in the next equation. The player who gets closest to 0 in 6 rounds, without going below 0, is the
Materials to Gather
Base-ten blocks, Number cubes

Materials to Copy
Target Numbers Stage 5 Recording Sheet (groups of 1)

Required Preparation
- Each group of 2 students will need 3 number cubes.
- Each group of 2 students will need base-ten blocks to represent at least 20 tens and 18 ones.

Launch
- Groups of 2
- Give each student a copy of the recording sheet.
- Give each group 3 number cubes and access to base-ten blocks.
- “We are going to learn a new way to play Target Numbers. You and your partner will start with 100 and race to see who can reach a number less than 10 first.”
- “Instead of using cards to decide whether to take away tens or ones, you will use number cubes to create a two-digit number and then subtract that number.”
- “First, represent 100 with base-ten blocks.”
- As needed, invite students to count by 10 to 100 using the base-ten blocks or invite student to share how they might represent 100 with the blocks.
- “When it's your turn, roll all 3 number cubes. Pick 1 number to represent the tens and one number to represent the ones. Then show the subtraction with your blocks and write an equation on your recording sheet.”
- “Take turns rolling and subtracting until the first person reaches a number less than 10.”
- As needed, demonstrate a round with a winner.
student volunteer.

**Activity**

- 10–15 minutes: partner work

**Synthesis**

- Display equation: $73 - _____ = _____$
- Draw or display number cubes showing 4, 2, and 5.
- “What two-digit numbers could you create with this roll that would make you need to decompose a ten to subtract? How do you know?” (Sample response: 24 because if you subtract by place, there are only 3 ones, so you would need to decompose to take away 4 ones.)
- “What two-digit numbers could you create that wouldn't require decomposing a ten? How do you know?” (Sample response: 52 because if you subtract by place there are 3 ones and you can take away 2 ones from 3 ones.)
- “What number would you create to try to get below 10 the fastest? Explain. (54 because it's the number that lets you take away the most tens and ones.)

---

**Activity 2**

Centers: Choice Time

**Standards Alignments**

Addressing 2.NBT.B.5, 2.OA.B.2

The purpose of this activity is for students to choose an activity to work on that focuses on
addition and subtraction within 100 or building fluency with addition and subtraction within 20. Students choose from any stage of previously introduced centers. Stage 4 of Capture Squares is also included as an extension.

- Target Numbers
- Capture Squares
- Five in a Row

Materials to Gather
Base-ten blocks, Materials from previous centers, Number cubes

Required Preparation
Gather materials from:

- Target Numbers, Stages 4 and 5
- Capture Squares, Stage 3 and 4
- Five in a Row, Stage 6

Student-facing Task Statement
Choose a center.

Target Numbers

Launch
- “Now you will choose from centers we have already learned. One of the choices is to continue Target Numbers, Subtract Two-digit Numbers.”
- 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.
- 8 minutes: center work time
- “Choose what you would like to do next.”
- 8 minutes: center work time
Lesson Synthesis

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

Math Community

“Was there something you struggled with today? How did you solve it? Did anyone help you?”

Synthesis

- “Which activity did you choose? What did you like about the activity you chose?”
Section C: Represent and Solve Story Problems

Lesson 11: How Do You Solve Story Problems?

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1
Building Towards 2.OA.A.1

Teacher-facing Learning Goals
- Represent and solve story problems within 50 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 represent and solve story problems involving addition and subtraction within 50 that require composing or decomposing a ten when adding or subtracting by place.

In previous lessons, students interpreted and solved story problems within 100 that did not require decomposing a ten when subtracting by place. Students interpreted diagrams and equations with unknowns and connected them to story problems.
In this lesson, students are encouraged to use the methods and representations that make the most sense to them as they solve problems of different types. The activities in this lesson can be used to assess how students make sense of different types of story problems and the methods they use to solve them.

Access for:

Students with Disabilities
- Engagement (Activity 2)

English Learners
- MLR2 (Activity 1)

Instructional Routines
5 Practices (Activity 1), What Do You Know About ____? (Warm-up)
Materials to Gather

- Base-ten blocks: Activity 1, Activity 2
- Connecting cubes: Activity 1

Lesson Timeline

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</table>

Teacher Reflection Question

Reflect on how comfortable your students are asking questions of you and of each other. What can you do to encourage students to ask and answer questions from their peers about their work?

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

Tyler’s Seeds

Standards Alignments

Addressing 2.OA.A.1

Student-facing Task Statement

Tyler gathered 42 sunflower seeds. Birds ate 28 of the seeds. How many seeds does Tyler have now? Show your thinking.

Student Responses

14 seeds. Sample response:

- Students label a drawing, diagram, or equation to show Tyler’s seeds and the seeds the birds ate.
- Students use a base-ten diagram to show $42 - 28 = 14$. 

---

Begin Lesson ---
Warm-up

What Do You Know About Story Problems?

Standards Alignments
Building Towards 2.OA.A.1

The purpose of this What Do You Know About _____? is to invite students to share what they know about story problems. Monitor for student comments regarding the types of story problems they know about and the methods they use to understand and represent story problems.

Instructional Routines
What Do You Know About _____?

Student-facing Task Statement
What do you know about story problems?

Student Responses
Sample responses:
- Story problems have things you can count and some have a question you have to answer.
- Some story problems compare two things.
- In some story problems something gets added or something gets taken away.
- You can act out a story problem.
- You can draw pictures or diagrams to show what is happening in a story problem.
- You can write equations to show a story problem.

Launch
- Display the question.
- “What do you know about story problems?”
- 1 minute: quiet think time

Activity
- Record responses.
- As needed, ask:
  - “What are some ways you can show what happens in a story problem?”

Synthesis
- “Today we are going to solve different types of story problems and share the different ways we represent and solve them.”

Activity 1

How Many Seeds?

| 10 min | 20 min |

Grade 2, Unit 2
Standards Alignments
Addressing  2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to solve a story problem in a way that makes sense to them. Students solve a Compare, Difference Unknown problem within 50 that requires composing or decomposing a ten if students add or subtract by place. During the synthesis, students describe and compare how they used tools, diagrams, and equations in different ways to make sense of and solve the problem (MP2, MP3, MP5).

Students may represent or solve the problem with any method that makes sense to them. Monitor and select students with the following methods to share during the synthesis:

- use connecting cubes or base-ten blocks to represent the problem as a comparison
- use a tape diagram to represent the problem
- use base-ten blocks to show adding or subtracting by place
- use a base-ten diagram to show adding or subtracting by place
- use an equation(s) to show adding or subtracting by place

Access for English Learners

MLR2 Collect and Display. Synthesis: Direct attention to words collected and displayed from the previous lessons to compare representations. Invite students to borrow language from the display as needed, and update it throughout the lesson.

Advances: Conversing, Reading

Instructional Routines

5 Practices

Materials to Gather

Base-ten blocks, Connecting cubes

Student-facing Task Statement


Launch

- Groups of 2
- Give students access to connecting cubes and base-ten blocks.
- “Has anyone ever seen seeds? Where have you seen them? Where can they be found?”
Student Responses

1. 26 more seeds. Sample responses:
   - I used base-ten blocks to show 16 and 42. I saw the there are 26 more in 42.
   - 42 — 10 = 32
   - 32 = 20 + 12
   - 12 — 6 = 6
   - 20 + 6 = 26

Activity

- Share responses.

Diego and Jada gathered seeds to plant. You can use the connecting cubes, base-ten blocks, or other representations to help make sense of the problem and solve it. Be prepared to explain your thinking.

- 6 minutes: independent work time

As students work, consider asking:

- “What do you need to find to answer the question? How do you know?”
- “How did you show Diego’s seeds?”
- “How did you show Jada’s seeds?”
- “How will you find the difference?”

- “Now compare your method with your partner. How are your methods the same? How are they different?”

- 2 minutes: partner discussion

Synthesis

- Invite previously identified students to share their methods in the given order.

- “How are the diagrams the same? How are they different?” (The diagrams all show Diego’s and Jada’s seeds. Some diagrams show the problem and help you see the bigger amount, the smaller amount, and the difference. Some diagrams show how we added and subtracted tens and ones.)

Advancing Student Thinking

If students find the sum of Diego and Jada’s seeds, consider asking:

- “What does the story problem ask you to find?”
- “How does your work show how many more seeds Diego used?”
- “How could you use your tools or a diagram to compare Diego and Jada’s seeds?”
Activity 2

The Seeds of Greatness

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to solve different types of story problems within 50 that may require composing or decomposing a ten when adding or subtracting by place. Students are encouraged to solve the story problems in a way that makes sense to them. The synthesis focuses on sharing the ways students made sense of and solve a Compare, Smaller Unknown problem.

Monitor for a variety of different ways students use drawings, diagrams, or equations to make sense of or solve the problems for sharing in the lesson synthesis. Look and listen for examples of ways students make sense of what they need to find, such as a tape diagram or base-ten blocks, before they use methods to calculate unknown values (MP1).

Access for Students with Disabilities

Engagement: Provide Access by Recruiting Interest. Provide choice. Invite students to decide which story problem to start with and what strategy they are going to use to show their thinking. Supports Accessibility for: Organization, Attention

Materials to Gather

Base-ten blocks

Student-facing Task Statement

Solve each story problem. Show your thinking.

1. Lin had 31 sunflower seeds. She gave Priya 15 seeds. How many seeds does Lin have now?

2. Noah used yellow and blue corn seeds to make a design. He used 37 seeds altogether. He used 28 yellow seeds. How many blue seeds did he use?

3. Elena gathered 50 pumpkin seeds. Andre collected 23 fewer pumpkin seeds than

Launch

- Groups of 2
- Give students access to base-ten blocks.

Activity

- “Work with your partner to make sense of each story problem and solve it. Show your thinking using drawings, numbers, or words.”
- 8 minutes: partner work time
- Monitor for different ways students use
Elena. How many seeds did Andre collect?

**Student Responses**

1. 16 seeds. Sample response:
   - Student labels drawings or equations to show how many seeds Lin starts with and how many she gives to Priya.
   - Students use base-ten drawings to show $31 - 15 = 16$.

2. 9 blue seeds. Sample response:
   - Student labels drawings or equations to show the yellow seeds, blue seeds, and total seeds.
   - $28 + 2 = 30$
   - $30 + 7 = 37$
   - $2 + 7 = 9$

3. 27 seeds. Sample response:
   - Students draw a tape diagram to show Elena's seeds, Andre's unknown seeds, and the difference.
   - Students draw a base-ten diagram to show decomposing a ten to subtract $50 - 23 = 27$.

**Synthesis**

- Invite previously identified students to share their diagrams and labels.
- If students do not use tape diagrams to show the last problem, but represent their thinking using visually similar ways (for example, placing a row of base-ten blocks above another row of base-ten blocks), record these methods using a tape diagram.
- Consider asking:
  - “How did your representation help you understand the story problem?” (It helped me show what was happening with the seeds in the story. It helped me show the different groups of seeds and what I needed to find.)
  - “How did your representation help you solve the story problem?” (It helped me see what I needed to find and helped me think about whether I wanted to add or subtract to find the unknown value.)

**Advancing Student Thinking**

If students attempt to compare the quantities in every problem or use representations that do not match the situation, consider asking:

- “What is happening in this story?”
- “How could you work together to act out the story?”

**Lesson Synthesis**

@ 10 min
Display a tape diagram, a base-ten diagram, and a student-invented diagram or drawing from the second activity.

“How are these diagrams and drawings the same? How are they different?” (They all show parts of the story problems we solved. The tape diagram shows parts of the story problem, but it doesn’t show how you add or subtract. The base-ten diagram shows the parts of the story and shows how you added or subtracted.)

“Which diagrams do you find most helpful when you are trying to understand a story? Which do you use when you solve the problem?”

**Suggested Centers**

- Target Numbers (1–5), Stage 5: Subtract Two-digit Numbers (Addressing)
- Capture Squares (1–3), Stage 4: Subtract within 20 (Addressing)
- Shake and Spill (K–2), Stage 5: Cover (up to 20) (Supporting)

--- Complete Cool-Down ---

**Response to Student Thinking**

Students show they know that 42 − 28 will find the value of Tyler’s seeds, but find a value other than 14.

The work in this lesson builds from the problem solving concepts developed in a prior unit.

**Next Day Support**

- Before the warm-up, have students work in partners to share their methods for how to find the value of 42 − 28.

**Prior Unit Support**

Grade 1, Unit 2, Section D: All Kinds of Story Problems
Lesson 12: Story Problems and Diagrams

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1
Building Towards 2.OA.A.1

Teacher-facing Learning Goals
● Make sense of diagrams that represent story problems.
● Solve one-step story problems within 100.

Student-facing Learning Goals
● Let’s make sense of diagrams and solve story problems.

Lesson Purpose
The purpose of this lesson is for students to solve story problems of different problem types within 100. Students interpret tape diagrams and connect them to different types of story problems.

In previous lessons, students solved different story problems within 50 and compared different diagrams and methods. Students interpreted and used tape diagrams to represent Compare story problems.

The problems in this lesson include some of the more challenging types (for example, Add To, Start Unknown). Students are introduced to tape diagrams as a way to represent the known and unknown quantities in Add To and Put Together / Take Apart problem types. Students are encouraged to find the unknown values in the way that makes the most sense to them. Students have opportunities to practice composing and decomposing a ten when using strategies based on adding or subtracting by place.

Access for:

 الإسلامي Students with Disabilities
● Engagement (Activity 2)

Instructional Routines
Card Sort (Activity 2), MLR6 Three Reads (Activity 1), Notice and Wonder (Warm-up)

Materials to Gather
● Base-ten blocks: Activity 1, Activity 2

Materials to Copy
● Story Problem and Diagram Cards (groups)
Lesson Timeline

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Teacher Reflection Question

How does matching the story problems to tape diagrams help students understand the relationship between the known and unknown quantities in a story problem? How will the work of today's lesson help students interpret and use equations to represent story problems?

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

Find the Match

Standards Alignments

Addressing 2.OA.A.1

Student-facing Task Statement

Mai is playing a game with seeds. She has some seeds in her hands and she placed 29 seeds on the game board. She has 53 seeds altogether. How many seeds are in Mai’s hands?

1. Circle the diagram that best matches the story problem.
   A.
   ![Diagram A]
   B.
   ![Diagram B]
Student Responses

1. C

2. It shows we know how many seeds Mai has altogether, but we don't know how many she has in her hands. The first part of the bar has a question mark to show that.

Warm-up

Notice and Wonder: Mancala

Standards Alignments

Building Towards 2.OA.A.1

The purpose of this warm-up is for students to make sense of a problem before solving it by familiarizing themselves with a context. While students may notice and wonder many things about the image, what students notice about the number and position of the seeds and students' experiences and questions about the game are the important discussion points.

During the synthesis, invite students who share experience with the mancala family of games to share what they call the game, what materials they use when they play, and how they play. If time, or if no students share experiences with the game materials, share the facts provided in the synthesis.

Consider researching the rules of one the mancala games mentioned in the synthesis or one of the
variants mentioned by students to play with the class.

Instructional Routines

Notice and Wonder

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

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

Activity
- “Discuss your thinking with your partner.”
- 1 minute: partner discussion
- Share and record responses.

Synthesis
- “The picture shows a type of a game called mancala. It is one of the world’s oldest games.”
- “Mancala was created in Africa. The game has over 800 different names and can be played in many different ways. Most games are played with a board that has different pits or holes in it. Each player uses a certain amount of seeds that they place on their side of the board. Players might use real seeds or they may use shells, rocks, or beads.”
- “Each player takes turns placing their seeds on the board. In most games, you try to ‘capture’ more seeds than the other player.”
- “In Ghana and the Carribean, one popular mancala game is called Oware. The board has 12 pits, 6 for each player, and the game uses 32 seeds.”
- “In Sudan, one popular mancala game is called Bao. The board for Bao has 28 pits, 14 pits for each player, and the game uses 64 seeds.”

Student Responses
Students may notice:
- It looks like a game.
- There are seeds in the holes and some seeds outside of the board.
- There are 14 holes. All the holes have some seeds in them.

Students may wonder:
- I wonder if it is a game or if it’s for holding food.
- I wonder how the game is played.
- I wonder why some spaces have more seeds than others.
- I wonder how many seeds there are in all.
seeds.”

- “The largest mancala game is called En Gehé and is played in Tanzania. The board can have up to 50 pits and the players use 400 seeds!”
- “Mancala is played all over the world. This board shows a game played in India called Pallanguzhi. The board has 14 pits and uses 70 seeds.”
- “What math questions could we ask about this image?” (How many seeds are there in all? How many seeds are in the holes? How many more seeds are on the top than on the bottom?)

### Activity 1

**Interpret the Diagram**

**Standards Alignments**

Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to make sense of tape diagrams, and how they can be used to show part-part-whole relationships. Students have previously used tape diagrams to show comparisons. In this activity, they connect tape diagrams to Compare problems and Put Together/Take Apart problems (MP2).

Students begin the activity by looking at the first problem displayed, rather than in their books. At the end of the launch, students open their books and work to find the diagram that matches the story problem. They do not solve the problems in this activity. The activity and synthesis are focused on developing student strategies for making sense of problems before solving them (MP1).

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

### Instructional Routines

MLR6 Three Reads
Materials to Gather

Base-ten blocks

Student-facing Task Statement

Circle the diagrams that match each story. Then explain your match to your partner.

1. Clare captured 54 seeds. Han captured 16 fewer seeds than Clare. How many seeds did Han capture?

2. Clare has 54 seeds on her side of the board. Han has 16 seeds on his side. How many seeds are on the board in all?

Launch

- Groups of 2
- Give students access to base-ten blocks.
- “Clare and Han are playing a game like mancala with seeds.”

Activity

MLR6 Three Reads

- Display only the problem stem for the first problem, without revealing the question.
- “We are going to read this problem 3 times.”
- 1st Read: “Clare captured 54 seeds. Han captured 16 fewer seeds.”
- “What is this story about?”
- 1 minute: partner discussion.
- Listen for and clarify any questions about the context.
- 2nd Read: “Clare captured 54 seeds. Han captured 16 fewer seeds.”
- “What are all the things we can count in this story?” (Clare’s seeds. Han’s seeds. The difference between their seeds.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share and record all quantities.
- Reveal the question.
- 3rd Read: Read the entire problem, including the question aloud.
- Ask students to open their books.
- “Which of the diagrams shows a way we could represent this problem?” (See Student Responses for the first problem).
3. Clare has 54 seeds. 16 seeds are in her hand. The rest of her seeds are on the game board. How many of her seeds are on the game board?

4. There are 54 seeds on the game board. Some seeds are on Han’s side. 16 seeds are on Clare’s side. How many seeds are on Han’s side of the board?

Choose the 2 diagrams that match.

**Student Responses**

1. A. Sample response: Diagram A shows that Clare has 54 seeds and that we don't know
how many seeds Han has. The diagram shows that we do know he has 16 fewer seeds.

2. B. Sample response: Diagram B matches because it shows Clare’s seeds and Han’s seeds put together. It shows we don’t know how many seeds are altogether. Diagram A shows both student’s seeds, but it shows finding the difference. The question doesn’t ask us to find how many more seeds or how many fewer seeds.

3. C. Sample response: Diagram C matches because it shows we know how many seeds are altogether and we know how many seeds are in Clare’s hands, but we don’t know how many seeds are on the board. It shows we could add or subtract to find how many seeds are on the board.

4. B and D. Sample response: Diagram B and D match because they both show that we know how many seeds Han and Clare have altogether and we know how many seeds Clare has, but we do not know how many seeds Han has. They both match because the order of Clare’s seeds or Han’s seeds on the diagram doesn’t matter. They are both part of the total.

Advancing Student Thinking

Students may say Diagram A matches the second story problem because the diagram shows the amount of seeds both students have in the story. Consider asking:

- “What does the question mark in each diagram represent?”
- “Which diagram best matches Han and Clare’s seeds and the question the story asks?”

Activity 2

Card Sort: Story Problems and Diagrams
Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to connect different types of story problems to tape diagrams and solve the problems. Students identify representations that match a story problem and justify their decisions by describing how the diagrams represent the relationships between the quantities or the actions in the story problem (MP4). When students analyze and connect the quantities and structures in the story problems and tape diagrams, they think abstractly and quantitatively (MP2) and make use of structure (MP7). Students will use the story problems from this card sort again in a future lesson.

Access for Students with Disabilities

Engagement: Develop Effort and Persistence. Check in and provide each group with feedback that encourages collaboration and community. For example, make sure students are discussing amongst themselves and highlight groups that are following the protocol, so that students know what is being expected of them.

Supports accessibility for: Social-Emotional Functioning, Organization

Instructional Routines
Card Sort

Materials to Gather
Base-ten blocks

Materials to Copy
Story Problem and Diagram Cards (groups of 2)

Required Preparation
- Create a set of cards from the Instructional master for each group of 2. The sets of cards will be used again in the next lesson.

Student-facing Task Statement
1. Match each story problem with a diagram. Explain why the cards match.
2. Choose 2 story problems and solve them. Show your thinking.

Launch
- Groups of 2
- Give each group one set of cards from the Instructional master.
- Give students access to base-ten blocks.
- “You are going to take turns reading a story problem. After one person reads, work
**Student Responses**


   - Card A: 91 apple seeds. Sample responses:
     - Students draw a base-ten diagram to show composing a new ten to find 52 + 39.
     - $2 + 9 = 11$
     - $50 + 30 = 80$
     - $80 + 11 = 91$

   - Card B: 13 seeds. Sample response:
     - Students draw a base-ten diagram to show decomposing a ten to find 52 – 39.
     - $52 = 40 + 12$
     - $12 - 9 = 3$
     - $40 - 30 = 10$
     - $10 + 3 = 13$

   - Card C: 13 seeds. Sample response:
     - $52 - 39 = ?$
     - $52 = 40 + 12$
     - $12 - 9 = 3$
     - $40 - 30 = 10$
     - $10 + 3 = 13$

   - Card D: 37 seeds. Sample response:
     - $? + 28 = 65$
     - $65 - 28 = ?$
     - $65 = 55 + 15$
     - $15 - 8 = 7$
     - $50 - 20 = 30$
     - $30 + 7 = 37$

**Activity**

- 8 minutes: small-group work time
- Monitor for students who explain how each diagram matches the quantities in the context of the story problem.
- 4 minutes: independent work time
- Monitor for students who solve Card B or C using methods based on place value for sharing in the synthesis.

**Synthesis**

- Invite students to share and explain their matches for cards A, B, and C.
- Consider asking:
  - “How do you know the diagram matches the story problem?”
  - “What did you do to solve the problem?”
- If time, select previously identified student(s) to share their method for solving Cards B or C.

**Advancing Student Thinking**

Students may mismatch stories and diagrams. Consider asking:

- “What do you know? What does the story problem ask you to find?”
“How does the diagram show the numbers that you know? How does the diagram show what you need to find?”

Lesson Synthesis

“Today we read many different kinds of story problems and matched them with diagrams.”

Display Card L and Card N from the card sort.

“How are these diagrams the same? How are they different?”

“How think of a story that could match Card N.”

Suggested Centers

- Target Numbers (1–5), Stage 5: Subtract Two-digit Numbers (Addressing)
- Capture Squares (1–3), Stage 4: Subtract within 20 (Addressing)
- Shake and Spill (K–2), Stage 5: Cover (up to 20) (Supporting)

Response to Student Thinking

Students show they understand the story problem can be solved by finding an unknown

Next Day Support

- During the launch of the warm-up, invite
addend in their explanation, but chose a Compare diagram as the match. students to compare how image A and image C are the same and different.
Lesson 13: Story Problems and Equations

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1
Building Towards 2.OA.A.1

Teacher-facing Learning Goals
- Make sense of equations that represent story problems.
- Represent and solve one-step story problems within 100.

Student-facing Learning Goals
- Let's make sense of equations and solve story problems.

Lesson Purpose
The purpose of this lesson is for students to make sense of equations and connect them to the quantities in different types of story problems. Students solve story problems of different problem types within 100 that require composing or decomposing a ten.

In previous lessons, students interpreted different types of story problems and matched them to diagrams.

In this lesson, students continue to connect story problems to diagrams and use their work to make sense of equations and symbols that represent the unknown number (MP2). Students solve different types of story problems within 100 using methods that make the most sense to them.

Access for:

Students with Disabilities
- Representation (Activity 2)

English Learners
- MLR8 (Activity 1)

Instructional Routines
Card Sort (Activity 1), Which One Doesn't Belong? (Warm-up)

Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
- Materials from a previous lesson: Activity 1

Materials to Copy
- Equations for Different Types of Word Problems (groups of 2): Activity 1
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>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

Students shared how they were thinking about using equations throughout today’s lesson. What language did students use to make connections between their equations and the story context? What questions did students have for their peers about the equations they used?

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

Match the Equation

Standards Alignments

Addressing 2.OA.A.1

Student-facing Task Statement

1. Diego collected 72 seeds. 25 seeds are orange seeds. The rest are apple seeds. How many of Diego’s seeds are apple seeds?

Circle the 2 equations that match this story problem.

A. $25 + ? = 72$
B. $72 + 25 = ?$
C. $72 - 25 = ?$
D. $? + 72 = 25$

2. Solve the problem. Show your thinking. Draw a diagram if it helps.

Student Responses

1. A and C
2. Sample response:
Warm-up

Which One Doesn’t Belong: Diagrams

Standards Alignments

Building Towards 2.OA.A.1

This warm-up prompts students to carefully analyze and compare features of tape diagrams and equations. In making comparisons, students have a reason to use language precisely (MP6). The activity also enables the teacher to hear the terminologies students know and how they talk about characteristics of tape diagrams and connect them to equations (MP2, MP7).

Instructional Routines

Which One Doesn’t Belong?

Student-facing Task Statement

Which one doesn’t belong?

A.

B.

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
Student Responses

- A doesn't belong because it is the only one that doesn't show 27. It shows the smaller part first.
- B doesn't belong because it is the only one that doesn't show an unknown addend.
- C doesn't belong because it is the only one that is not a diagram.
- D doesn't belong because it is the only one that doesn't show part-part-whole. It shows a comparison.

Synthesis

- “Let's find at least one reason why each one doesn't belong.”
- “Which diagram best matches the equation in C? Explain.”
symbol for the unknown that match a story problem and justify their decisions by describing how the equations represent the quantities and any actions in the story problem (MP4). When students analyze and connect the quantities and structures in the story problems and equations, they are thinking abstractly and quantitatively (MP2) and making use of structure (MP7).

Access for English Learners

MLR8 Discussion Supports. Display sentence frames to support discussion as students explain their reasoning to their partner: “I noticed __, so I matched . . . .” Encourage students to challenge each other when they disagree.

Advances: Conversing, Representing

Instructional Routines

Card Sort

Materials to Gather

Base-ten blocks, Materials from a previous lesson

Materials to Copy

Equations for Different Types of Word Problems (groups of 2)

Required Preparation

- Create a set of cards from the Instructional master for each group of 2–4.
- Each group of 2–4 needs a set of cards from the previous lesson.

Student-facing Task Statement

1. Match each story problem with an equation. Explain why the cards match.
2. Choose 2 story problems and solve them. Show your thinking.

Student Responses

2. Card F: 93 seeds. Sample responses:
   - Student draws a base-ten diagram to show composing a new ten to find 65 + 28.

Launch

- Groups of 2–4
- Give each group the story problems (Cards A–I) from the Story Problem and Diagram Cards.
- Give one set of Equation Cards to each group of students.
- Give each group access to base-ten blocks.
- “Take turns reading the story problems. After one person reads, work together to find an equation that matches. When you think you have found a match, explain to your group why the cards match.”
- “If you think that more than one card could match the story, explain the match to your
○ 5 + 8 = 13
  60 + 20 = 80
  80 + 13 = 93
• Card G: 58 seeds. Sample response:
  ○ Student draws a base-ten diagram
to show decomposing a ten to find
  77 − 19.
  ○ 77 = 60 + 17
  17 − 9 = 8
  60 − 10 = 50
  50 + 8 = 58
• Card H: 96 seeds. Sample response:
  ○ 70 + 10 = 80
  7 + 9 = 16
  80 + 16 = 96
• Card I: 58 seeds. Sample response:
  ○ 77 − 19 = ?
  77 = 67 + 10
  67 − 10 = 57
  10 − 9 = 1
  57 + 1 = 58

Advancing Student Thinking

Students may believe that only one equation could match each story. Encourage students to describe how equations match any actions in the story and whether any other equations show the same actions. If there are no actions in the story, ask students to explain why one or more cards shows the relationship between the parts and the whole. Consider providing the tape diagrams from the previous activity to support students in their explanations.

Activity

• 6 minutes: partner work time
• Monitor for students who explain why
  more than one equation may match a story
  and how the equations match the
  quantities in the context of the story
  problem.
• 4 minutes: independent work time

Synthesis

• Invite students to share a match for each
  story.
• Consider asking:
  ○ “How does the equation match the
    story problem?”
  ○ “Is there another equation that
    could match the story problem?
    Explain why or why not.”

Activity 2

Represent and Solve Story Problems
Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to use tape diagrams and equations to represent different types of story problems within 100. In this activity, students interpret story problems and use diagrams and equations to represent the unknown quantities. Students are encouraged to solve using a method that makes sense to them.

Students may complete the parts of each problem in an order that makes sense to them. In the synthesis, students compare and connect their diagrams, equations, and methods for solving (MP2, MP7). Monitor for students who draw accurate diagrams and create different equations for the problem with Noah and Kiran’s seeds to share in the lesson synthesis.

Access for Students with Disabilities

Representation: Develop Language and Symbols. Provide students with access to a chart that shows an example of a completed tape diagram so that students can refer to it as they work on the activity. Supports accessibility for: Visual-Spatial Processing, Memory, Attention

Materials to Gather

Base-ten blocks

Student-facing Task Statement

<table>
<thead>
<tr>
<th>36</th>
<th>64</th>
</tr>
</thead>
<tbody>
<tr>
<td>seeds at start</td>
<td>seeds won</td>
</tr>
</tbody>
</table>

1. Lin played a game with seeds. She started the game with some seeds. Then she won 36 seeds. Now she has 64 seeds. How many seeds did Lin have at first?
   a. Write an equation using a question mark for the unknown value.
   b. Solve. Show your thinking using drawings, numbers, or words.
2. Andre started a game with 32 seeds. Then he won more seeds. Now he has 57 seeds.

Launch

- Groups of 2
- Give each group access to base-ten blocks.

Activity

- “Now you get a chance to draw diagrams and write equations that represent story problems.”
- “Read the story carefully. Then solve each problem and show your thinking.”
- 8 minutes: independent work time
- 5 minutes: partner discussion
- Monitor for students who:
  - use an addition equation to represent Andre’s seeds
How many seeds did Andre win?

a. Label the diagram to represent the story.

b. Write an equation using a question mark for the unknown value.

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

3. Diego gathered 22 seeds from yellow flowers and 48 seeds from blue flowers. How many seeds did he gather in all?

a. Label the diagram to represent the story.

b. Write an equation using a question mark for the unknown value.

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


a. Draw a diagram to represent the story.

b. Write an equation using a question mark for the unknown value.

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

○ subtract to find the number of seeds Andre won using a base-ten diagram or equations.

Synthesis

- Invite a previously identified student to share their completed tape diagram and the addition equation for Andre’s seeds.
- Invite a previously identified student to share the way they used subtraction to find how many seeds Andre won.
- “How are ____’s equation and ____’s method the same? How are they different?” (They both use the same numbers. ____’s method is a way to find the unknown value in the equation. They are different because the equation is addition, but the method shows subtraction).
- “Does ____’s method using subtraction match the actions in the story problem? Explain why or why not.” (No. The story tells about starting with some seeds and getting more seeds. That is addition. But you can use subtraction to find the value, since there is an unknown addend.)
- “Sometimes it might be better to use addition or subtraction equations to represent the actions that are happening in a story. But you can always use addition or subtraction to find an unknown addend.”
drawings, numbers, or words.

**Student Responses**

1. a. equation: \( ? + 36 = 64 \)
   b. solution: 28 seeds. Sample response:
      Student draws base-ten diagram to show decomposing a ten to find 64 – 36.

2. a. diagram:
   ![Diagram](image)
   b. equation: \( 32 + ? = 57 \)
   c. solution: 25 seeds. Sample response:
      Student draws a base-ten diagram showing adding on 2 more tens and 5 more ones to 3 tens and 2 ones.

3. a. diagram:
   ![Diagram](image)
   b. equation: \( 22 + 48 = ? \)
   c. solution: 70 seeds. Sample response:
      \[
      20 + 40 = 60 \\
      2 + 8 = 10 \\
      60 + 10 = 70
      \]

4. a. diagram:
   ![Diagram](image)
   b. equation: \( 53 + ? = 92 \) or \( 92 - 53 = ? \)
   c. solution: 39 seeds Sample response:
      \[
      92 - 50 = 42 \\
      42 = 30 + 12 \\
      12 - 3 = 9 \\
      30 + 9 = 39
      \]
Advancing Student Thinking

If students draw their own diagrams, but do not label the quantities, consider asking:

- “What are the different things that you can count in the story? How does your diagram show these things?”
- “What could you add to your diagram to help someone make connections to the story?”

Lesson Synthesis

Display student work samples for the story about Noah and Kiran’s seeds that show an accurate diagram, an addition equation that represents the story, and a subtraction equation that represents the story.

“Do both equations match the story and the diagram? Explain.” (Yes. Each equation shows the total amount of seeds and Noah’s seeds. The question mark shows Kiran’s seeds. You could show how Noah’s seeds and Kiran’s seeds are related with addition or subtraction.)

“Which helps you make sense of a story—a diagram, an equation, or both?”

Suggested Centers

- Target Numbers (1–5), Stage 5: Subtract Two-digit Numbers (Addressing)
- Capture Squares (1–3), Stage 4: Subtract within 20 (Addressing)
- Math Stories (K–2), Stage 4: Add and Subtract (Supporting)

Response to Student Thinking

Students only match one equation to the story problem.

Next Day Support

- Before the warm-up, invite students to work in small groups to discuss a correct response to this cool-down.
Lesson 14: Solve It Your Way

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

Teacher-facing Learning Goals
- Use diagrams or equations to represent and solve one- and two-step story problems within 100.

Student-facing Learning Goals
- Let's solve story problems and share our thinking with others.

Lesson Purpose
The purpose of this lesson is for students to represent and solve one- and two-step story problems. Students use representations to make sense of problems, support their calculations, and explain their thinking.

In previous lessons, students solved different problem types within 100. Students made sense of story problems and connected story problems to diagrams and equations. The activities in this lesson can be used to assess the methods students use to make sense of and solve story problems on their own. Students are introduced to the idea that story problems could have more than one step. In the first activity, students solve a Put Together / Take Apart, Result Unknown problem that includes three addends. Students are presented the story in two separate parts. In the second activity, students work in groups to solve related story problems on their own and then work together to solve a two-step Put Together / Take Apart problem.

This lesson has a Student Section Summary.

Access for:

Students with Disabilities
- Action and Expression (Activity 2)

English Learners
- MLR8 (Activity 1)

Instructional Routines
MLR7 Compare and Connect (Activity 2), Number Talk (Warm-up)

Materials to Gather
- Base-ten blocks: Activity 1, Activity 2
• Connecting cubes: Activity 1
• Tools for creating a visual display: 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>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

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) 5 min

Jada’s Seeds

Standards Alignments

Addressing 2.OA.A.1

Student-facing Task Statement

1. Jada has 15 apple seeds and 23 orange seeds. How many seeds does she have in all? Show your thinking.
2. Jada gathered 37 more seeds. How many seeds does she have now? Show your thinking.

Student Responses

1. 38 seeds. Sample response:

   - 15 + 23 = ?
   - 15 + 20 = 35
   - 35 + 3 = 38
2. 75 seeds. Sample response:

37 + 38 = ?
7 + 8 = 15
30 + 30 = 60
60 + 15 = 75

---

**Warm-up**

Number Talk: Multiple Addends

**Standards Alignments**

Addressing 2.NBT.B.5

This Number Talk encourages students to think about place value and to rely on the properties of operations to make it easier to find the value of an expression mentally (MP7). The methods elicited here will be helpful later in the lesson when students make sense of and solve Put Together/Take Apart, Result Unknown problems with multiple two-digit addends.

**Instructional Routines**

Number Talk

**Student-facing Task Statement**

Find the value of each expression mentally.

- 5 + 9 + 5
- 25 + 9 + 5
- 25 + 15 + 19

**Launch**

- Display one problem.
- “Give me a signal when you have an answer and can explain how you got it.”
- 1 minute: quiet think time
• 25 + 30 + 15 + 19

**Student Responses**

- 19: I know 5 + 5 = 10, 10 + 9 = 19
- 39: I added 25 + 5 = 30 to make a new ten. 30 + 9 = 39
- 59: I added the tens first (20 + 10 + 10 = 40). Then I knew 5 + 5 make another ten (40 + (5 + 5) = 40 + 10 = 50). Last I added 9 more (50 + 9 = 59).
- 89: I added 25 and 15 first because I knew it was 40 from the last expression. Then I added 30 to get 70. Last I added 19.

**Activity**

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

**Synthesis**

- “How did you choose which numbers to add first?” (I looked for ways to make a ten. I looked for ways to use sums I’ve done before. I added tens first then I tried to make tens with the ones.)

**Activity 1**

Put It All Together

**Standards Alignments**

Addressing 2.NBT.B.5, 2.OA.A.1

The purpose of this activity is for students to represent and solve a two-step story problem. The story problem is presented in parts, and students are encouraged to represent each part in a way that makes sense to them. In the synthesis, students compare different ways they represent and solve the problem (MP2).

**Access for English Learners**

*MLR8 Discussion Supports.* To support both students with an opportunity to produce language, display a question starter “How did you do the problem?” and sentence frames “First, I ______ because . . . .” “My method is like yours because . . . .” “Our methods are different because . . . .”

**Advances: Conversing, Representing**

**Materials to Gather**

Base-ten blocks, Connecting cubes
Student-facing Task Statement

1. Andre gathered seeds. He has 25 sunflower seeds and 17 squash seeds. How many seeds does he have? Show your thinking.

2. Andre gathered more seeds. He has 35 cucumber seeds. How many seeds does Andre have altogether? Show your thinking.

3. Compare your thinking with your partner.

Student Responses

1. 42 seeds. Sample response:
   - $25 + 17 = ?$
   - $20 + 10 = 30$
   - $5 + 7 = 12$
   - $30 + 12 = 42$

2. 77 seeds. Sample response:
   - $42 + 35 = ?$
   - $42 + 30 = 72$
   - $72 + 5 = 77$

Launch

- Groups of 2
- Give students access to connecting cubes and base-ten blocks.

Activity

- “Read each problem with your partner and solve it on your own. Show your thinking using diagrams, equations, or words.”
- 5 minutes: independent work time
- 5 minutes: partner discussion
- Monitor for students who use tape diagrams and equations to represent each problem.

Synthesis

- Invite previously identified students to share their tape diagram and equation for each part.
- “How did ____ represent the problem? How does each representation show the story problem?”
- Display $25 + 17 + 35 = ?$
- “How does this equation represent Andre’s seeds?” (It shows all the seeds he has in one equation.)
- “What are other ways we could add to find the sum?” (We could add 25 and 35 first. Then add 17. We could add 17 and 35 and then add 25.)

Activity 2

Select, Solve, and Share

20 min
Standards Alignments

Addressing 2.OA.A.1

The purpose of this activity is for students to represent and solve one- and two-step story problems using methods that make the most sense to them. Students each select a problem to solve on their own and share their work with their group. Each group uses the solutions to solve a two-step Put Together, Result Unknown problem. Students have multiple opportunities to describe and compare the different ways their peers represent and solve story problems (MP2, MP3, MP6).

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

Access for Students with Disabilities

Action and Expression: Internalize Executive Functions. Invite students to plan a strategy, including the tools they will use, to solve the problem. If time allows, invite students to share their plan with a partner before they begin.

Supports accessibility for: Conceptual Processing, Organization, Attention

Instructional Routines

MLR7 Compare and Connect

Materials to Gather

Base-ten blocks, Tools for creating a visual display

Student-facing Task Statement

1. Decide which problem each member of your group will solve.
   a. Priya has 24 fewer seeds than Tyler. Tyler has 53 seeds. How many seeds does Priya have?
   b. Jada and Mai have 61 seeds. Jada has 39 seeds. How many seeds does Mai have?
   c. Kiran started the game with 24 seeds. He won 17 seeds on his turn. How many seeds does he have now?

Launch

- Groups of 3
- Give students access to base-ten blocks.

Activity

- “Read the problems together. Each person in your group must solve one problem on their own. Decide together who will solve each problem. Be ready to share your thinking with your group.”
- “After everyone shares and you agree on how many seeds each character has,
2. Solve the problem. Show your thinking.
3. Share your thinking with your group. After everyone has shared, complete the sentences with your answers. Then solve the story problem together.
   - Priya has __________ seeds.
   - Mai has __________ seeds.
   - Kiran has __________ seeds.

   How many seeds do they have in all?

**Student Responses**

1. N/A
2. A. Priya has 29 seeds. Sample response:
   - \(? + 24 = 53\) or \(53 - 24 = ?\)
   - \(53 - 20 = 33\)
   - \(33 - 4 = 33 - 3 - 1 = 30 - 1 = 29\)

   B. Mai has 22 seeds. Sample response:
   - \(39 + ? = 61\) or \(61 - 39 = ?\)
   - \(60 = 50 + 11\)
   - \(50 - 30 = 20\)
   - \(11 - 9 = 2\)
   - \(20 + 2 = 22\)

   C. Kiran has 41 seeds. Sample response:
   - \(24 + 17 = ?\)
   - \(20 + 10 = 30\)
   - \(4 + 7 = 11\)

   complete the story and solve the problem together.
   - 4 minutes: independent work time
   - 5 minutes: small-group discussion

**Synthesis**

**MLR7 Compare and Connect**

- Give each group a piece of chart paper and markers.
- “Create a visual display that shows your thinking about the story problem you solved as a group. You may want to include details such as drawings, diagrams, equations, and labels to help others understand your thinking.”
- 5–7 minutes: gallery walk
- “What is the same and what is different between the different ways we made sense of and solved the story problem?” (Some groups used more than one tape diagram and equation to represent the problem. Some groups used one equation. We added the characters seeds in different ways. We used different ways to show how we added.)
- 30 seconds quiet think time
- 1 minute: partner discussion
30 + 11 = 41

3. 29, 22, 41, and 92 seeds. Sample response:
   - 29 + 22 + 41 = ?
   - 29 + 41 = ?
     29 + 1 = 30
     30 + 40 = 70
   - 70 + 22 = ?
     70 + 22 = 92

Lesson Synthesis

“In this section, we practiced making sense of and solving different kinds of story problems and using what we know about adding and subtracting two-digit numbers.”

“What do you do to make sense of and solve story problems?”

“What ideas for solving story problems have you learned from others?”

Suggested Centers

- Target Numbers (1–5), Stage 5: Subtract Two-digit Numbers (Addressing)
- Capture Squares (1–3), Stage 4: Subtract within 20 (Addressing)
- Math Stories (K–2), Stage 4: Add and Subtract (Supporting)

Student Section Summary

In this section, we solved many different kinds of story problems. We used diagrams and equations to make sense of problems.

Jada started with some seeds. Then she won 28 seeds from Elena. Now she has 65 seeds. How many seeds did Jada have at the start?

? + 28 = 65

We shared how we make sense of story problems, how we solve them, and what we learned from each
other.

Complete Cool-Down

Response to Student Thinking

Students add the 38 new seeds in the second problem to only one addend from the first problem.

Students add to solve the first problem, but find a value other than 38.

Next Day Support

- Before the warm-up, pass back the cool down and work in small groups to make corrections.
Lesson 15: Center Day 3 (Optional)

**Standards Alignments**
Addressing 2.NBT.B.5, 2.OA.A.1, 2.OA.B.2

**Teacher-facing Learning Goals**
- Add and subtract within 100.
- Interpret diagrams.
- Solve one-step story problems.

**Student-facing Learning Goals**
- Let’s use diagrams to make our own story problems and solve them.

**Lesson Purpose**
The purpose of this lesson is for students to interpret diagrams, solve story problems, and add and subtract within 100.

This lesson is optional because it is an opportunity for extra practice interpreting diagrams and adding and subtracting within 100 that not all classes may need. In the first activity, students learn stage 5 of the Math Stories center, which was last introduced in grade 1. In this new stage, called Tape Diagrams, students interpret tape diagrams and create their own story problems to solve. Then, students choose a center based on what they need to practice. Students may continue to choose stages that provide additional practice adding and subtracting two-digit numbers or may choose the stages that provide fluency practice with addition and subtraction within 20.

As needed, revisit and reinforce the structures and norms for centers that were established in previous lessons.

**Instructional Routines**

**Number Talk Warm-up**

**Materials to Gather**
- Materials from previous centers: Activity 2

**Materials to Copy**
- Math Stories Stage 5 Recording Sheet (groups of 1): Activity 1
- Math Stories Stage 5 Tape Diagrams (groups of 2): Activity 1

**Lesson Timeline**

| Warm-up | 10 min |

**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. List ways you have seen yourself grow as a teacher. What will you continue to do and what will you improve upon in the next unit?

---

**Begin Lesson**

### Warm-up

**Number Talk: Subtract Multiples of 10**

**Standards Alignments**

Addressing 2.NBT.B.5

The purpose of this Number Talk is to elicit the methods students have for subtracting tens from a two-digit number. After students consider and discuss ways to take tens from tens in the first three expressions, students are encouraged to use repeated reasoning to consider subtracting 20 from 35 and adding 1 to compensate (MP8) to find the value of 35 – 19. These understandings help students develop fluency with operations within 100 and will be helpful later in the lesson when students add and subtract within 100 to solve problems.

**Instructional Routines**

Number Talk

**Student-facing Task Statement**

Find the value of each expression mentally.

- 25 – 10
- 35 – 10
- 35 – 20
- 35 – 19

**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
Student Responses

- 15: I took away 1 ten.
- 25: I took away 1 ten.
- 15: I took away 2 tens.
- 16: I took away 2 tens and gave 1 one back since it was only 19, not 20.

Activity

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

Synthesis

- Highlight in the first three problems that the tens can be subtracted while the ones are left alone.
- Highlight how the result of 35 – 20 can be used to calculate 35 – 19. Record this with the equation: 35 – 19 = 35 – 20 + 1.

Activity 1

Introduce Math Stories, Tape Diagrams

Standards Alignments

Addressing 2.OA.A.1

The purpose of this activity is for students to learn stage 5 of the Math Stories center. Students pose and solve addition and subtraction story problems about tape diagrams.

Materials to Copy

Math Stories Stage 5 Recording Sheet (groups of 1), Math Stories Stage 5 Tape Diagrams (groups of 2)

Required Preparation

- Create a set of cards from the Instructional master for each group of 2.

Launch

- Groups of 2
- Give each student a recording sheet.
Grade 2

- Give each group a set of cards.
- “In this center activity, you are going to look at diagrams and tell math stories about them.”
- “Pick a diagram that you want to use to create your story problem. Then your partner will solve the problem. Make sure to write an equation to represent each story you tell.”
- As needed, demonstrate with a student volunteer.

**Activity**

- 15 minutes: partner work time
- Monitor for students who tell Put Together/Take Apart or Add to story problems and those that tell Compare story problems with tape diagrams.

**Synthesis**

- Invite previously identified students to share.
- “What is the same about these story problems? What is different?”
- If time, ask:
  - “How do their stories match the diagrams?”
  - “How do the equations match the stories?”

**Activity 2**

Centers: Choice Time

**Standards Alignments**

- Addressing 2.NBT.B.5, 2.OA.B.2
The purpose of this activity is for students to choose from activities that focus on addition and subtraction within 100 or addition and subtraction within 20.

Students choose from any stage of previously introduced centers.

- Target Numbers
- Capture Squares
- Five in a Row

**Materials to Gather**

Materials from previous centers

**Required Preparation**

Gather materials from:

- Target Numbers, Stages 4 and 5
- Capture Squares, Stages 3 and 4
- Five in a Row, Stage 6

**Student-facing Task Statement**

Choose a center.

Target Numbers

Capture Squares

Five in a Row

**Launch**

- “Now you will choose from different centers we have learned that focus on adding and subtracting.”
- Display the center choices in the student book.
- “Think about which activity you would like to do first.”
- 30 seconds: quiet think time

**Activity**

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

“Today we used diagrams to tell our own stories and practiced adding and subtracting.”

“Would you rather create a story problem or solve a story problem? Explain.”

**Synthesis**

- “Which activity did you choose? What did you like about the activity you chose?”
Lesson 16: Our Market’s Inventory (Optional)

Standards Alignments
Addressing 2.NBT.B.5, 2.NBT.B.6, 2.OA.A.1
Building Towards 2.OA.A.1

Lesson Purpose
The purpose of this lesson is for students to apply strategies for adding and subtracting within 100 within the context of a store.

This lesson is optional because it does not address any new mathematical content standards. This lesson does provide students with an opportunity to apply precursor skills of mathematical modeling.

In previous lessons students learned how to add and subtract within 100. In this lesson, students role-play buying and selling items in a store. Students are responsible for selling 3 types of goods and keeping 100 items in stock for sale.

In the first activity students adhere to certain constraints and choose what they want to sell and how much they want to sell. When students make decisions and choices and adhere to constraints, they model with mathematics (MP4). They set up their inventory sheet to keep track of their sales. In the second activity they take turns buying and selling. Sellers keep track of their inventory after each sale and at the end consider what they need to restock. When students analyze numerical information and interpret results, they model with mathematics (MP4).

An optional third activity gives students an opportunity to present a sales report.

Access for:

Students with Disabilities
- Representation (Activity 1)

English Learners
- MLR8 (Activity 2)

Instructional Routines
Notice and Wonder (Warm-up)

Materials to Gather
- Materials from a previous activity: Activity 2
- Number cubes: 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>10 min</td>
</tr>
<tr>
<td>Activity 2</td>
<td>20 min</td>
</tr>
<tr>
<td>Activity 3</td>
<td>15 min</td>
</tr>
<tr>
<td>Lesson Synthesis</td>
<td>10 min</td>
</tr>
</tbody>
</table>

Teacher Reflection Question

If you were to teach this lesson over again, what activity would you redo? How would your proposed changes support student learning?

---

Warm-up

Notice and Wonder: The Shopping Cart

Standards Alignments

Building Towards 2.OA.A.1

The purpose of this warm-up is for students to interpret an image of a shopping cart full of groceries. Students reflect on what they usually shop for. This will be useful when they investigate the market context further during the activities.

Instructional Routines

Notice and Wonder

Student-facing Task Statement

What do you notice? What do you wonder?

Launch

- Groups of 2
- Display the image.
- “Han went grocery shopping with his family. Here is their basket. What do you notice? What do you wonder?”
- 1 minute: quiet think time
Student Responses

Students may notice:

- There are specific quantities of certain items.
- There are different kinds of items.
- Some items are multiple while others are single items.
- The shopping basket is full.

Students may wonder:

- What are they going to make?
- How much did this all cost?
- What else are they going to buy?

Activity

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

Synthesis

- “What are some things you or your family buy at the grocery store?”
- “Where are other places we can buy things?”
  (online, markets like bodegas or delis, convenience stores, supermarkets, big box stores)

Activity 1

100 Items

Standards Alignments

Addressing 2.NBT.B.5, 2.NBT.B.6, 2.OA.A.1

In this activity, students decide on the inventory for items sold in a market of their choice. They must keep 3 kinds of items in stock and use their understanding of adding and subtracting within 100 to make sure they have a total of 100 items in their store. They will use their completed inventory sheet in the next activity.
Access for Students with Disabilities

*Representation: Access for Perception.* Provide access to connecting cubes in 3 different colors to represent store items.

*Supports accessibility for: Organization, Conceptual Processing*

Student-facing Task Statement

You sell 3 kinds of items in a store. At the beginning of each day you have:

- a total of 100 items
- less than 10 of one of the items
- more than 10 for the other 2

1. Choose 3 items to sell at your market. Write the names of the items in the first row.
2. Fill in the second row to show how much of each item you begin the day with.
3. Share your store set-up with your partner pair. Discuss:
   - the amount you have for each item
   - how you know that you have a total of 100 items at your store

<table>
<thead>
<tr>
<th>names</th>
<th>item 1:</th>
<th>item 2:</th>
<th>item 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>amount at the beginning of the day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sales activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>amount at the end of the day</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Launch

- Groups of 2.
- “You will decide 3 kinds of items to sell in a store of your choice and have a total of 100 items.”
- “When you write how much you have at the beginning of the day, for one of the items, you should have less than 10 in total.”
- “You should have more than 10 each of the other two items you pick.”

Activity

- “In this activity, you will fill out only the first two rows. Then complete the rest in the next activity.”
- 5 minutes: independent work time.
- 2 minutes: partner discussion

Synthesis

- “What are some ways we can prove that we have exactly 100 items?” (Add up the three numbers and get 100. Subtract two numbers from 100 and get the last number. Add two numbers and then subtract the result from 100 to get the third number.)

Student Responses

1. First row completed.
2. Second row completed.
3. Sample responses:
I want 55 apples and 9 cans of corn. So I need 36 bananas. $55 + 9 = 64$ and $64 + 36 = 100$.

If there are 100 things and 9 of them are building block sets, then there are 91 left. If 55 of those are paint sets, then I have 36 left and those must be hoverboards.

### Activity 2

**Buyers and Sellers**

**Standards Alignments**

Addressing 2.NBT.B.5, 2.NBT.B.6, 2.OA.A.1

In this activity, students role-play running a market and shopping at each other's stores. Students use their understanding of adding and subtracting within 100 to sell and restock their items using their inventory sheet. Students roll a number cube and use the results to decide how much of each item they buy in the store. Throughout the activity, they must make sense of the numbers and operations they use in the context of the market scenario (MP2). Buyers must use their results strategically and interpret them in the context of the number of items available at the store before they buy. Sellers must also keep track of their inventory by keeping up with how many of an item has sold and comparing that with how many they have in stock.

As an alternative to students going around the room to buy and sell, students can work in groups of 4.

**Access for English Learners**

MLR8 Discussion Supports. Think aloud and use gestures to act out the scenario. Clarify questions about the context, and discuss the meaning of any unfamiliar terms or phrases such as: sale, sales activity, inventory, inventory sheet.

**Advances: Representing.**

**Materials to Gather**

Materials from a previous activity, Number
cubes

Student-facing Task Statement

1. At your table, take turns rolling a number cube. Each person should roll three times. Record each roll.
   - Roll 1: __________
   - Roll 2: __________
   - Roll 3: __________
2. Buyers: You will buy a certain amount of each item. Use the numbers you rolled to make:
   - two-digit numbers
   - one-digit numbers
3. Sellers: After a sale, update the total number of items you have sold on your inventory sheet next to “sales activity.”

Student Responses

1. Ranges from 1–6
2. Students may add or subtract to create one- and two-digit numbers or use the result of their rolls as digits to create two-digit numbers.
3. Sellers add to the total amount sold after each sale and make sure they don’t exceed their total inventory for each item.

Launch

- Groups of 2
- Give each group a number cube.
- Read the first problem.
- Students roll and record.
- Read the directions for buyers.
- As needed, demonstrate how students can:
  - use the results of the rolls as digits to create two-digit numbers
  - add or subtract the values of their rolls to create new two-digit or one-digit numbers
- Read the directions for sellers and show where they will update how many items they have sold.
- “Use the numbers you rolled to decide how much of something you will buy. Before you make your decisions, look at the inventory. Consider your possible numbers.”
- 2–3 minutes: partner work time

Activity

- “Pair up with another person in the room. Take turns and buy from each other. Use the digits from your rolls to decide how much of an item you can buy.”
- “If you are selling, update your ‘sales activity’ after each purchase. Before a new buyer makes a purchase, make sure you have enough in your inventory.”
- “When you finish buying and selling, move on to another person until I tell you to stop.”
- 10–15 minutes: partner work time
- Monitor for students who:
strategically use the results of the rolls as digits or add or subtract their results before they buy

○ compose or decompose tens when they update their sales or consider if they have enough of an item to sell

• If opting to not complete the next activity:
  When students return to their seats, “Record your end-of-day total. Summarize what happened in your store to your group.”

**Synthesis**

• Invite previously selected students to share.

• “How did you decide how to use rolls strategically, based on what was in the store's inventory?” (If there were more items, I used a two-digit number. I had to think about which digit goes first.)

• “Did anyone run low on an item? Did anyone run out of an item? What did you tell your buyer?”

---

**Activity 3**

Sales Reports

**Standards Alignments**

Addressing 2.NBT.B.5, 2.NBT.B.6

In this activity, students summarize the sales activity in their store by using their inventory sheet to record their total sales, their ending inventory, and the number of items they need to restock the shelves for the next day. They use their understanding of the relationship between addition and subtraction to observe that the number of items subtracted (total sales) is the same as the
number of items that need to be added to get back to the starting inventory (MP7).
Students give a sales report to summarize the activity in their store.

**Student-facing Task Statement**

1. Fill out the inventory sheet with the information from your sales from the previous activity.

<table>
<thead>
<tr>
<th></th>
<th>item 1</th>
<th>item 2</th>
<th>item 3</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>starting amount</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of items sold</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of items left</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restock amount</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Summarize the activity of your store.

**Launch**

- Same groups of 2
- “When you work in a store, at the end of the day you have to see how many items you have sold and you have to restock your shelves for the next day.”

**Activity**

- “For each product, record how many items were sold, how many are left, and how many are needed to restock.”
- 5 minutes: independent work time
- “Now share your sales report with your partner.”
- 4 minutes: partner discussion
- Monitor for:
  - students who share a clear and organized presentation
  - students who notice the restock amount and the sale amount is the same

**Synthesis**

- Invite previously identified students to share their sales reports.
- “How did you decide the number of items to get from the stockroom?”
- “How can we be sure this is the correct restock amount?” (We’re replacing the exact amount that was sold. If we add the restock amount and the number of items left, we get the original starting amount.)
Lesson Synthesis

“We've been learning about adding and subtracting within 100. How does today's lesson connect to what we learned?”

Suggested Centers

- Target Numbers (1–5), Stage 5: Subtract Two-digit Numbers (Addressing)
- Math Stories (K–2), Stage 5: Tape Diagrams (Addressing)
Family Support Materials
Family Support Materials

Adding and Subtracting within 100

In this unit, students add and subtract within 100 using strategies based on place value, properties of operations, and the relationship between addition and subtraction. They then use what they know to solve story problems.

Section A: Add and Subtract

This section allows students to use methods that make sense to them to help them solve addition and subtraction problems. They can draw diagrams and use connecting cubes to show their thinking. For example, students would be exposed to the following situation:

- Make trains with cubes.
- Find the total number of cubes you and your partner used. Show your thinking.
- Find the difference between the number of cubes you and your partner used. Show your thinking.

As the lessons progress, students analyze the structure of base-ten blocks and use them to support place-value reasoning. Unlike connecting cubes, base-ten blocks cannot be pulled apart. Students begin to think about two-digit numbers in terms of tens and ones. To add using base-ten blocks, they group the tens and the ones, and then count to find the sum.
Section B: Decompose to Subtract

In this section, students subtract one- and two-digit numbers from two-digit numbers within 100. They use strategies based on place value and the properties of operations to evaluate expressions that involve decomposing a ten. For example, to evaluate expressions such as $63 - 18$, students use connecting cubes or base-ten blocks as they learn to trade in a ten for 10 ones before grouping by place value. In this case they can trade one of the tens in 63 for 10 ones, making it 5 tens and 13 ones. They can then subtract 1 ten from 5 tens and 8 ones from 13 ones, resulting in 4 tens and 5 ones, or 45.

![Image of decomposing a ten]

Section C: Represent and Solve Story Problems

This section focuses on solving one-step story problems that involve addition and subtraction within 100. The story problems are all types—Add To, Take From, Put Together, Take Apart, and Compare—and have unknowns in all positions. A question that your student might be exposed to is:

*Diego gathered 42 orange seeds.*
*Jada gathered 16 apple seeds.*

How many more seeds did Diego gather than Jada?

*Show your thinking.*
Try it at home!

Near the end of the unit ask your student to solve the following word problem:

Diego gathered 37 orange seeds.
Jada gathered 25 more apple seeds than Diego.
How many seeds did Jada gather?
Show your thinking.

Questions that may be helpful as they work:

• Can you explain to me how you solved the problem?
• What pieces of information were helpful?
• How does your representation show the answer to the problem?
Unit Assessments

Check Your Readiness A, B and C
End-of-Unit Assessment
**Assessment: Section A Checkpoint**

**Teacher Instructions**
Give students access to base-ten blocks.

**Problem 1**

**Goals Assessed**
- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 – 23, where decomposing a 10 is not required.

**Statement**
What is the value of $75 - 61$?

**Solution**
14. If I add 10 to 61 that's 71 and then 4 more is 75.

**Problem 2**

**Goals Assessed**
- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 – 23, where decomposing a 10 is not required.

**Statement**
Find the number that makes the equation true.

$$$ + 18 = 59$$

**Solution**
41 since $40 + 18 = 58$ and then 1 more makes 59.
Problem 3

Goals Assessed

- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 – 23, where decomposing a 10 is not required.

Statement

Noah walked his dog for 24 minutes on Friday and for 65 minutes on Saturday. How many more minutes did Noah walk the dog on Saturday than on Friday?

Explain or show your reasoning.

Solution

41. 24 is 2 tens and 4 ones and 65 is 6 tens and 5 ones. There are 4 more tens and 1 more one in 65 so that's 41. Sample representation:
Assessment: Section B Checkpoint

Teacher Instructions
Give students access to base-ten blocks.

Problem 1

Goals Assessed
• Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.

Statement
Select 3 statements that are true about this representation.

A. It shows 45 − 18.
B. It shows 45 + 18.
C. A ten is decomposed into 10 ones.
D. The result is 2 tens and 7 ones.
E. 10 ones are composed to make a ten.

Solution
["A", "C", "D"]

Problem 2

Goals Assessed
• Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.
Statement

Here is Mai’s work to find the value of $65 - 28$. Explain why Mai’s method works.

$65 - 20 = 45$
$45 - 5 = 40$
$40 - 3 = 37$

Solution

Mai breaks 28 into 3 pieces: 20, 5, and 3. She first subtracts 20. This gives 2 fewer tens, leaving 45. Then she takes away the 5 ones leaving 40. Then she takes away 3 more ones to get 37.

Problem 3

Goals Assessed

- Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.

Statement

Find the value of $44 - 17$. Explain or show your reasoning.

Solution

27. Sample response. I can subtract 10 from 44 to get 34 and then subtracting 7 more leaves 27.
**Assessment : Section C Checkpoint**

**Teacher Instructions**

Give students access to base-ten blocks.

**Problem 1**

**Goals Assessed**

- Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.

**Statement**

Select 3 equations that the tape diagram represents.

A.  \(? + 29 = 46\)
B.  \(46 + 29 = ?\)
C.  \(46 - ? = 29\)
D.  \(? - 46 = 29\)
E.  \(46 - 29 = ?\)

**Solution**

["A", "C", "E"]

**Problem 2**

**Goals Assessed**

- Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.
Statement

There are 73 students in the gym. There are 26 students on the playground. How many fewer students are on the playground than in the gym?

Show your thinking using drawings, numbers, or words.

Solution

Sample response:

There are 47 fewer students on the playground since $73 - 20 = 53$ and then I take away 6 more to get 47.

Problem 3

Goals Assessed

- Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.

Statement

There are 23 kids and 14 adults in the swimming pool. Then 15 more kids come to join them. How many people are in the swimming pool now?

Show your thinking using drawings, numbers, or words.

Solution

Sample response:

I first added the tens and ones of 23 and 14 to get 37. Then I added 1 ten and 5 ones to get 52. There were 52 people in the swimming pool.
Teacher Instructions
Give students access to base-ten blocks.

Problem 1
Students evaluate expressions where a multiple of 10 is added to or subtracted from a two-digit number. While it is not possible to know if students performed the arithmetic mentally, students who do not answer this question correctly may profit from more work with place value for numbers within 100.

Statement
Select 3 expressions whose value is 75.
A. 35 + 20  
B. 85 − 10  
C. 7 + 50  
D. 45 + 30  
E. 95 − 20

Solution
["B", "D", "E"]

Aligned Standards
2.NBT.B.8

Problem 2
Students solve a two-step Add To followed by Take From problem within 50. Regrouping is not needed for the first operation, but it is required for the second unless students use a method such as counting back or drawing a base-ten diagram.

Statement
Jada has 40 stickers. She gets 13 more stickers. How many stickers does she have?
Jada gave 15 stickers to Noah. How many stickers does Jada have now? Show your thinking using drawings, numbers, words.

Solution
Sample response: She has 53 after getting 13 more, \(40 + 13 = 53\). She has 38 after giving 15 to Noah, \(53 - 15 = 38\).
**Problem 3**

Students find the value of an addition expression and a subtraction expression using a method of their choosing. Both problems involve composing or decomposing a ten. Students may draw a picture or use equations.

**Statement**

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

1. 23 + 19 =
2. 75 – 36 =

**Solution**

1. 42. Sample reasoning: \(23 + 10 = 33\), \(33 + 7 = 40\), \(40 + 2 = 42\).
2. 39. Sample reasoning: \(75 – 30 = 45\), \(45 – 6 = 39\).

**Aligned Standards**

2.NBT.B.5, 2.OA.A.1

---

**Problem 4**

Students have seen different ways to subtract where a ten is decomposed. The method presented here shows a ten decomposed into 10 ones and then the subtraction takes place by place value. Students may write equations to show their work or they may explain in words. The focus here should be on explaining the decomposition of a ten and how that helps complete the calculation, allowing Elena to subtract 7 ones.

**Statement**

Elena drew this diagram to find the value of 53 – 17.

![Diagram of base-10 blocks with 1 ten and 13 ones, with 1 ten removed to show 36 ones remaining.]

Explain Elena’s strategy using drawings, numbers, or words.

**Solution**

Elena subtracts 7 by taking the 3 ones in 53 and then 4 more ones from a ten. She takes away 1 ten so she removed 17 total from 53 and there are 36 left.


**Aligned Standards**

2.NBT.B.9

**Problem 5**

Students evaluate addition and subtraction expressions using any method they like. Students are not expected to explain their reasoning though they may make drawings or write equations.

**Statement**

Find the value of each expression.

1. \( 52 + 14 \)
2. \( 67 - 45 \)
3. \( 38 + 19 \)
4. \( 83 - 25 \)

**Solution**

1. 66
2. 22
3. 57
4. 58

**Aligned Standards**

2.NBT.B.5

**Problem 6**

Students solve a two-step addition problem using numbers presented in a table. The answers to the first two questions do not impact student responses to the third. The first question is intended to familiarize students with the information and the second question complements the addition for the final question with a subtraction problem. All of the operations require composition or decomposition of a ten unless students use a different technique such as counting on or counting back. Students may make drawings, use equations, or explain their reasoning in words. The given responses include one drawing and a combination of words and expressions.

**Statement**

The table shows the number of different pets at an animal rescue.

<table>
<thead>
<tr>
<th>group</th>
<th>number of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>dogs</td>
<td>35</td>
</tr>
<tr>
<td>rabbits</td>
<td>19</td>
</tr>
<tr>
<td>group</td>
<td>number of animals</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------</td>
</tr>
<tr>
<td>cats</td>
<td>27</td>
</tr>
</tbody>
</table>

1. Which group has the most animals? Which group has the least?
2. How many fewer rabbits are there than dogs at the shelter? Show your thinking using drawings, numbers, or words.
3. How many animals are there altogether at the shelter. Show your thinking using drawings, numbers, or words.

**Solution**

1. The dogs are the biggest group and the rabbits are the smallest.
2. There are 35 dogs and 19 rabbits so I need to subtract 19 from 35. I drew a picture and after crossing out 19 there are 16 left. There are 16 more dogs than rabbits.

![Diagram of dogs and rabbits]

3. There are 81 animals at the shelter. First I added the dogs and rabbits. I know $35 + 20$ is 55 and $35 + 19$ is one less so that's 54. Then I added the cats. I first added 2 tens to the 5 tens of 54 and that's 7 tens. Then I added the 4 ones from 54 to 7 and that is 11. I know 70 + 11 is 81 so there are 81 animals altogether at the shelter.

**Aligned Standards**

2.NBT.B.5, 2.OA.A.1
Assessment Answer Keys

Check Your Readiness A, B and C
End-of-Unit Assessment
Teacher Instructions

Give students access to base-ten blocks.

Problem 1

Goals Assessed

- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 - 23, where decomposing a 10 is not required.

What is the value of 75 - 61?

Explain or show your reasoning.

Solution

14. If I add 10 to 61 that's 71 and then 4 more is 75.

Problem 2

Goals Assessed

- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 - 23, where decomposing a 10 is not required.

Find the number that makes the equation true.

______ + 18 = 59

Explain or show your reasoning.

Solution

41 since 40 + 18 = 58 and then 1 more makes 59.
Problem 3

Goals Assessed

- Add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction. Problems in this section are limited to the problems like 65 - 23, where decomposing a 10 is not required.

Noah walked his dog for 24 minutes on Friday and for 65 minutes on Saturday. How many more minutes did Noah walk the dog on Saturday than on Friday?

Explain or show your reasoning.

Solution

41. 24 is 2 tens and 4 ones and 65 is 6 tens and 5 ones. There are 4 more tens and 1 more one in 65 so that's 41. Sample representation:
Assessment: Section B Checkpoint

Teacher Instructions

Give students access to base-ten blocks.

Problem 1

Goals Assessed

- Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.

Select 3 statements that are true about this representation.

A. It shows $45 - 18$.
B. It shows $45 + 18$.
C. A ten is decomposed into 10 ones.
D. The result is 2 tens and 7 ones.
E. 10 ones are composed to make a ten.

Solution

["A", "C", "D"]
Problem 2

Goals Assessed

- Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.

Here is Mai’s work to find the value of $65 - 28$. Explain why Mai’s method works.

\[
65 - 20 = 45 \\
45 - 5 = 40 \\
40 - 3 = 37
\]

Solution

Mai breaks 28 into 3 pieces: 20, 5, and 3. She first subtracts 20. This gives 2 fewer tens, leaving 45. Then she takes away the 5 ones leaving 40. Then she takes away 3 more ones to get 37.

Problem 3

Goals Assessed

- Subtract within 100 using strategies based on place value, including decomposing a ten, and the properties of operations.

Find the value of $44 - 17$. Explain or show your reasoning.

Solution

27. Sample response. I can subtract 10 from 44 to get 34 and then subtracting 7 more leaves 27.
Assessment: Section C Checkpoint

Teacher Instructions

Give students access to base-ten blocks.

Problem 1

**Goals Assessed**

- Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.

Select 3 equations that the tape diagram represents.

A. \(? + 29 = 46\)
B. \(46 + 29 = ?\)
C. \(46 - ? = 29\)
D. \(? - 46 = 29\)
E. \(46 - 29 = ?\)

Solution

["A", "C", "E"]
Problem 2

**Goals Assessed**
- Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.

There are 73 students in the gym. There are 26 students on the playground. How many fewer students are on the playground than in the gym?

Show your thinking using drawings, numbers, or words.

**Solution**

Sample response:

There are 47 fewer students on the playground since $73 - 20 = 53$ and then I take away 6 more to get 47.

Problem 3

**Goals Assessed**
- Represent and solve one- and two-step problems involving addition and subtraction within 100, including different problem types with unknowns in all positions.

There are 23 kids and 14 adults in the swimming pool. Then 15 more kids come to join them. How many people are in the swimming pool now?

Show your thinking using drawings, numbers, or words.

**Solution**

Sample response:
I first added the tens and ones of 23 and 14 to get 37. Then I added 1 ten and 5 ones to get 52. There were 52 people in the swimming pool.
Assessment: End-of-Unit Assessment

Teacher Instructions

Give students access to base-ten blocks.

Problem 1

Standards Alignments
Addressing 2.NBT.B.8

Narrative

Students evaluate expressions where a multiple of 10 is added to or subtracted from a two-digit number. While it is not possible to know if students performed the arithmetic mentally, students who do not answer this question correctly may profit from more work with place value for numbers within 100.

Select 3 expressions whose value is 75.

A. 35 + 20
B. 85 − 10
C. 7 + 50
D. 45 + 30
E. 95 − 20

Solution

["B", "D", "E"]

Problem 2

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1
**Narrative**

Students solve a two-step Add To followed by Take From problem within 50. Regrouping is not needed for the first operation, but it is required for the second unless students use a method such as counting back or drawing a base-ten diagram.

Jada has 40 stickers. She gets 13 more stickers. How many stickers does she have?

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**Solution**

Sample response: She has 53 after getting 13 more, $40 + 13 = 53$. She has 38 after giving 15 to Noah, $53 - 15 = 38$.

**Problem 3**

**Standards Alignments**

Addressing 2.NBT.B.5

**Narrative**

Students find the value of an addition expression and a subtraction expression using a method of their choosing. Both problems involve composing or decomposing a ten. Students may draw a picture or use equations.

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

a. $23 + 19 = _____$

b. $75 - 36 = _____$

**Solution**

a. 42. Sample reasoning: $23 + 10 = 33$, $33 + 7 = 40$, $40 + 2 = 42$.

Problem 4

 Standards Alignments
Addressing 2.NBT.B.9

 Narrative
Students have seen different ways to subtract where a ten is decomposed. The method presented here shows a ten decomposed into 10 ones and then the subtraction takes place by place value. Students may write equations to show their work or they may explain in words. The focus here should be on explaining the decomposition of a ten and how that helps complete the calculation, allowing Elena to subtract 7 ones.

Elena drew this diagram to find the value of 53 – 17.

![Diagram](image)

Explain Elena’s strategy using drawings, numbers, or words.

Solution

Elena subtracts 7 by taking the 3 ones in 53 and then 4 more ones from a ten. She takes away 1 ten so she removed 17 total from 53 and there are 36 left.

Problem 5

 Standards Alignments
Addressing 2.NBT.B.5

 Narrative
Students evaluate addition and subtraction expressions using any method they like. Students are not expected to explain their reasoning though they may make drawings or write equations.

Find the value of each expression.
Problem 6

Standards Alignments
Addressing 2.NBT.B.5, 2.OA.A.1

Narrative

Students solve a two-step addition problem using numbers presented in a table. The answers to the first two questions do not impact student responses to the third. The first question is intended to familiarize students with the information and the second question complements the addition for the final question with a subtraction problem. All of the operations require composition or decomposition of a ten unless students use a different technique such as counting on or counting back. Students may make drawings, use equations, or explain their reasoning in words. The given responses include one drawing and a combination of words and expressions.

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a. Which group has the most animals? Which group has the least?
b. How many fewer rabbits are there than dogs at the shelter? Show your thinking using drawings, numbers, or words.

c. How many animals are there altogether at the shelter. Show your thinking using drawings, numbers, or words.

Solution

a. The dogs are the biggest group and the rabbits are the smallest.

b. There are 35 dogs and 19 rabbits so I need to subtract 19 from 35. I drew a picture and after crossing out 19 there are 16 left. There are 16 more dogs than rabbits.

c. There are 81 animals at the shelter. First I added the dogs and rabbits. I know $35 + 20$ is 55 and $35 + 19$ is one less so that's 54. Then I added the cats. I first added 2 tens to the 5 tens of 54 and that's 7 tens. Then I added the 4 ones from 54 to 7 and that is 11. I know $70 + 11$ is 81 so there are 81 animals altogether at the shelter.
Lesson
Cool Downs
Lesson 1: Add and Subtract to Compare

Cool Down: Compare the Trains

Elena used 23 cubes to make a train. Jada used 36 cubes to make a train.

How many more cubes did Jada use than Elena? Show your thinking. Use cubes if it helps.
Lesson 2: Find the Unknown Addend

Cool Down: Find the Unknown Addend

Find the number that makes the equation true. Show your thinking. Use blocks or cubes if it helps.

$36 + _____ = 78$
Lesson 3: Add or Subtract to Solve Story Problems

Cool Down: Time to Leave

89 students were at the zoo. 41 students left the zoo on the first bus. How many students are at the zoo now?

Show your thinking. Use blocks if it helps.
Lesson 5: Subtract Your Way

Cool Down: Find the Difference

Find the value of $75 - 9$. Show your thinking.
Lesson 6: Compare Methods for Subtraction

Cool Down: Mai’s Method
Mai was asked to find the difference for $52 - 7$. She started, but she got stuck. Finish Mai’s method.
Lesson 7: Subtract Two Digits

Cool Down: Decompose to Subtract

Find the value of $61 - 32$. Show your thinking. Use blocks if it helps.
Lesson 8: Different Ways to Decompose

Cool Down: Whose Method is it Anyway?

Mai and Lin were asked to find the value of 63 \( - \) 18. Compare their methods.

Mai's Way

Lin's Way

1. Name 1 thing that is the same about Mai and Lin's methods.

2. Name 1 thing that is different about Mai and Lin's methods.
Lesson 9: Add and Subtract Within 100

Cool Down: Find the Value Your Way

Find the value of each expression. Show your thinking. Use blocks if it helps.

1. $95 - 26$

2. $28 + 56$
Lesson 11: How Do You Solve Story Problems?

Cool Down: Tyler’s Seeds

Tyler gathered 42 sunflower seeds. Birds ate 28 of the seeds. How many seeds does Tyler have now? Show your thinking.
Lesson 12: Story Problems and Diagrams

Cool Down: Find the Match

Mai is playing a game with seeds. She has some seeds in her hands and she placed 29 seeds on the game board. She has 53 seeds altogether. How many seeds are in Mai's hands?

1. Circle the diagram that best matches the story problem.
   A. 
   ![Diagram A]

   B. 
   ![Diagram B]

   C. 
   ![Diagram C]

2. Explain your choice.
Lesson 13: Story Problems and Equations

Cool Down: Match the Equation

1. Diego collected 72 seeds. 25 seeds are orange seeds. The rest are apple seeds. How many of Diego’s seeds are apple seeds?

Circle the 2 equations that match this story problem.

1. 25 + ? = 72
2. 72 + 25 = ?
3. 72 − 25 = ?
4. ? + 72 = 25

2. Solve the problem. Show your thinking. Draw a diagram if it helps.
Lesson 14: Solve It Your Way

Cool Down: Jada’s Seeds

1. Jada has 15 apple seeds and 23 orange seeds. How many seeds does she have in all? Show your thinking.

2. Jada gathered 37 more seeds. How many seeds does she have now? Show your thinking.
Instructional Masters
# Instructional Masters for Adding and Subtracting within 100

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</tr>
</tbody>
</table>
How many apple seeds did Jade have at the start?
Jade started with 28 seeds. Now she has 65 seeds.

How many apple seeds did Elena gather?
Elena gathered some apple seeds and 39 orange seeds. Together, Elena gathered 52 orange seeds.

How many apple seeds did she gather?
Jada gathered 52 orange seeds. Then she won 39 more apple seeds. Now she has 95 apple seeds.

How many apple seeds did the Garden gather?
The Garden gathered 95 apple seeds.
Story Problem and Diagram Cards

How many seeds does she have now?

Jada started a game with 77 seeds. She won 19 more seeds.

Second Game?

How many of her seeds did Jada win in the first game?

Jada won 77 seeds in the first game. She won 19 fewer seeds in the second game. She won 77 seeds in the first game, she won 77 - 19 = 58 seeds in the second game.

How many seeds are on the game board in the second game?

How many seeds are on the game board in the second game?

Jada has 28 seeds on her side of the game board. Elena has 65 seeds on her side of the game board.

How many more seeds did Elena win than Jada?

Elena won 65 seeds. Jada won 28 seeds.

How many seeds did Jada win than Elena?

Jada won 77 seeds. Elena won 65 seeds. How many seeds did Jada win than Elena?

Jada won 77 seeds. Elena won 65 seeds. How many seeds did Jada win than Elena?
Jada started her turn with only 19 seeds. Now she has 77 seeds. How many seeds did she win during her turn?
Story Problem and Diagram Cards

M

Story Problem and Diagram Cards

N

Story Problem and Diagram Cards

O

Story Problem and Diagram Cards

P

Story Problem and Diagram Cards

Q

Story Problem and Diagram Cards

R

Story Problem and Diagram Cards

S

Story Problem and Diagram Cards

T
Story Problem and Diagram Cards

---

Story Problem and Diagram Cards
Capture Squares Stage 3 Gameboard

Directions:
- On your turn:
  - Spin the spinner and take 1 number card. Find the sum.
  - Choose a square on the gameboard that shows that number. Draw one line connecting any 2 dots around the number.
  - If you can't draw a line, spin again and take a new card.
  - If you draw a line that finishes a square around a number, shade in that box with your color.
- Take turns with your partner. The first player to shade in 3 boxes wins.
Capture Squares Stage 3 Gameboard

Directions:

- On your turn:
  - Spin the spinner and take 1 number card. Find the sum.
  - Choose a square on the gameboard that shows that number. Draw one line connecting any 2 dots around the number.
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- Take turns with your partner. The first player to shade in 3 boxes wins.
Equations for Different Types of Word Problems

\[ 77 - 19 = ? \]

\[ 39 + ? = 52 \]

\[ ? + 39 = 52 \]

\[ ? + 28 = 65 \]

\[ 65 + 28 = ? \]

\[ 19 + ? = 77 \]

Equations for Different Types of Word Problems
Equations for Different Types of Word Problems

\[ 77 + 19 = ? \]

\[ 28 + ? = 65 \]

\[ 69 - 28 = ? \]

\[ ? - 39 = 52 \]

\[ 52 + 39 = ? \]

\[ ? + 19 = 77 \]
Using Blocks to Take Away

Using Blocks to Take Away
Player 1

Diego has 7 tens and 4 ones.

Using Blocks to Take Away
Player 2

Lin has 7 tens and 1 one.

Using Blocks to Take Away
Player 3

Jada has 6 tens and 3 ones.

Using Blocks to Take Away
Player 4

Han has 6 tens and 2 ones.

Using Blocks to Take Away
A

Han took away 2 tens and 8 ones.

Using Blocks to Take Away
B

Jada took away 27.
Using Blocks to Take Away

Han took away 15.

Jada took away 1 ten and 8 ones.

Lin took away 2 tens and 9 ones.

Lin took away 16.

Diego took away 1 ten and 9 ones.

Diego took away 37.
Capture Squares Stage 3 Spinner

The spinner is divided into six sections, each labeled with different numbers:
- 7
- 8
- 9
- 10
- Wild
- Wild

The spinner also has a section labeled "wild".
Capture Squares Stage 3 Spinner

The spinner is divided into six sections:

- 7
- 8
- 6
- 9
- Wild
- 10
Sort and Find the Value

A

64 + 27

B

72 + 19

C

92 - 63

D

65 - 36

Sort and Find the Value
Sort and Find the Value

E

35 + 42

F

56 - 24

G

83 - 58

H

27 + 33
Sort and Find the Value

K

L

72 – 19

Sort and Find the Value

J
Sort and Find the Value

Sort and Find the Value

Sort and Find the Value

Sort and Find the Value
Sort and Find the Value

Q

Sort and Find the Value

R

Sort and Find the Value

0
Math Stories Stage 5 Tape Diagrams

Math Stories Stage 5

I

Math Stories Stage 5

J

Math Stories Stage 5

K

Math Stories Stage 5

L
Math Stories Stage 5 Tape Diagrams

I

J

K

L
Directions: (two-digit plus two-digit)

- Partner A: Put a paper clip on 2 numbers in the grey rows. Cover the sum of the 2 numbers with a counter.
- Partner B: Move 1 of the paper clips, add the numbers, and cover the sum with a counter.
- Take turns. The first partner to cover 5 squares in a row wins.

<table>
<thead>
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<th>81</th>
<th>91</th>
<th>54</th>
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<tr>
<td>65</td>
<td>19</td>
<td>57</td>
<td>26</td>
<td>48</td>
</tr>
</tbody>
</table>
**Five in a Row Addition and Subtraction Stage 6 Gameboard**

Directions: (one-digit plus two-digit)
- Partner A: Put a paper clip on 2 numbers in the grey rows. Cover the sum of the 2 numbers with a counter.
- Partner B: Move 1 of the paper clips, add the numbers, and cover the sum with a counter.
- Take turns. The first partner to cover 5 squares in a row wins.

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<td>57</td>
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</tr>
</tbody>
</table>

|   |   |   |   |   |
|---|---|---|---|
| 5 | 6 | 7 | 8 |
| 17| 25| 49| 58|

66
Directions: (two-digit plus two-digit)
- Partner A: Put a paper clip on 2 numbers in the grey rows. Cover the sum of the 2 numbers with a counter.
- Partner B: Move 1 of the paper clips, add the numbers, and cover the sum with a counter.
- Take turns. The first partner to cover 5 squares in a row wins.

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<td>48</td>
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</tr>
</tbody>
</table>
Directions: (one-digit plus two-digit)

- Partner A: Put a paper clip on 2 numbers in the grey rows. Cover the sum of the 2 numbers with a counter.
- Partner B: Move 1 of the paper clips, add the numbers, and cover the sum with a counter.
- Take turns. The first partner to cover 5 squares in a row wins.

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<td>17</td>
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<td>49</td>
<td>58</td>
<td>66</td>
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</tr>
</tbody>
</table>
Target Numbers Stage 4 Recording Sheet

Directions:
- On your turn:
  - Start at 100. Draw a number card. Choose whether to subtract that number of tens or ones.
  - Write an equation to represent the difference.
- Take turns until you've played 6 rounds.
- Each round, the difference from the previous equation is the starting number in the new equation.
- The partner who gets a difference closest to 0 without going below 0 wins.

<table>
<thead>
<tr>
<th>number card</th>
<th>choose</th>
<th>equation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tens or ones</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 - _____ =</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tens or ones</td>
<td></td>
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<tr>
<td></td>
<td>_____ - _____ =</td>
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<td></td>
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<td>_____ - _____ =</td>
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<td>_____ - _____ =</td>
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<td></td>
<td>tens or ones</td>
<td></td>
</tr>
<tr>
<td></td>
<td>_____ - _____ =</td>
<td></td>
</tr>
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Target Numbers Stage 4 Recording Sheet

Directions:
- On your turn:
  - Start at 100. Draw a number card. Choose whether to subtract that number of tens or ones.
  - Write an equation to represent the difference.
- Take turns until you've played 6 rounds.
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<table>
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<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>tens or ones</td>
<td>100 - _______ =</td>
</tr>
<tr>
<td></td>
<td>tens or ones</td>
<td>_______ - _______ =</td>
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<td>_______ - _______ =</td>
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<td>tens or ones</td>
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<td>_______ - _______ =</td>
</tr>
<tr>
<td></td>
<td>tens or ones</td>
<td>_______ - _______ =</td>
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</tbody>
</table>
Directions:
● Partner A:
  ○ Choose one of the tape diagrams. (Don't tell your partner which one!)
  ○ Make up a story problem that the tape diagram could represent.
● Partner B: Solve the problem and draw a diagram that matches the story.
● Take turns.

<table>
<thead>
<tr>
<th>my tape diagram:</th>
<th>my answer: _________</th>
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<tbody>
<tr>
<td>my tape diagram:</td>
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<td>my tape diagram:</td>
<td>my answer: _________</td>
</tr>
<tr>
<td>my tape diagram:</td>
<td>my answer: _________</td>
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</tbody>
</table>
Math Stories Stage 5 Recording Sheet

Directions:
- Partner A:
  - Choose one of the tape diagrams. (Don't tell your partner which one!)
  - Make up a story problem that the tape diagram could represent.
- Partner B: Solve the problem and draw a diagram that matches the story.
- Take turns.

<table>
<thead>
<tr>
<th>my tape diagram:</th>
<th>my answer: ________</th>
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<td>my tape diagram:</td>
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<tr>
<td>my tape diagram:</td>
<td>my answer: ________</td>
</tr>
<tr>
<td>my tape diagram:</td>
<td>my answer: ________</td>
</tr>
</tbody>
</table>
Directions:

- On your turn:
  - Start at 100. Roll 3 number cubes. Pick 1 number to represent the tens and 1 number to represent the ones.
  - Subtract the number you chose.
  - Write an equation to represent the difference.

- Take turns until you’ve played 6 rounds.
- Each round, the difference from the previous equation is the starting number in the new equation.
- The partner who gets a difference closest to 0 without going below 0 wins.

<table>
<thead>
<tr>
<th>roll and choose</th>
<th>equation</th>
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<tbody>
<tr>
<td>___ tens</td>
<td>100 - ___ = ___</td>
</tr>
<tr>
<td>___ ones</td>
<td></td>
</tr>
<tr>
<td>___ tens</td>
<td>___ - ___ = ___</td>
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<tr>
<td>___ ones</td>
<td>___ - ___ = ___</td>
</tr>
<tr>
<td>___ tens</td>
<td>___ - ___ = ___</td>
</tr>
<tr>
<td>___ ones</td>
<td>___ - ___ = ___</td>
</tr>
<tr>
<td>___ tens</td>
<td>___ - ___ = ___</td>
</tr>
<tr>
<td>___ ones</td>
<td>___ - ___ = ___</td>
</tr>
<tr>
<td>___ tens</td>
<td>___ - ___ = ___</td>
</tr>
<tr>
<td>___ ones</td>
<td>___ - ___ = ___</td>
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</tbody>
</table>
Target Numbers Stage 5 Recording Sheet

Directions:
- On your turn:
  - Start at 100. Roll 3 number cubes. Pick 1 number to represent the tens and 1 number to represent the ones.
  - Subtract the number you chose.
  - Write an equation to represent the difference.
- Take turns until you’ve played 6 rounds.
- Each round, the difference from the previous equation is the starting number in the new equation.
- The partner who gets a difference closest to 0 without going below 0 wins.

<table>
<thead>
<tr>
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<th>equation</th>
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</thead>
<tbody>
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<td>____ tens</td>
<td>100 - ____ = ____</td>
</tr>
<tr>
<td>____ ones</td>
<td></td>
</tr>
<tr>
<td>____ tens</td>
<td>- =</td>
</tr>
<tr>
<td>____ ones</td>
<td>_______ - _______ = _______</td>
</tr>
<tr>
<td>____ tens</td>
<td>- =</td>
</tr>
<tr>
<td>____ ones</td>
<td>_______ - _______ = _______</td>
</tr>
<tr>
<td>____ tens</td>
<td>- =</td>
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<tr>
<td>____ ones</td>
<td>_______ - _______ = _______</td>
</tr>
<tr>
<td>____ tens</td>
<td>- =</td>
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<td>____ ones</td>
<td>_______ - _______ = _______</td>
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<tr>
<td>____ tens</td>
<td>- =</td>
</tr>
<tr>
<td>____ ones</td>
<td>_______ - _______ = _______</td>
</tr>
</tbody>
</table>
Capture Squares Stage 1 Gameboard

Directions:
- On your turn:
  - Roll 2 number cubes. Find the sum.
  - Choose a square on the gameboard that shows that number. Draw one line connecting any 2 dots around the number.
  - If you can’t draw a line, roll again.
  - If you draw a line that finishes a square around a number, shade in that box with your color.
- Take turns with your partner. The first player to shade in 3 boxes wins.
**Five in a Row Addition and Subtraction Stage 5 Gameboard**

Directions: (two-digit plus two-digit)
- Partner A: Put a paper clip on 2 numbers in the grey rows. Cover the sum of the 2 numbers with a counter.
- Partner B: Move 1 of the paper clips, add the numbers, and cover the sum with a counter.
- Take turns. The first partner to cover 5 squares in a row wins.

<table>
<thead>
<tr>
<th>55</th>
<th>68</th>
<th>38</th>
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<tr>
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<td>62</td>
<td>13</td>
<td>51</td>
<td>24</td>
<td>43</td>
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</table>
Five in a Row Addition and Subtraction Stage 5 Gameboard

Directions: (one-digit plus two-digit)

- Partner A: Put a paper clip on 2 numbers in the grey rows. Cover the sum of the 2 numbers with a counter.
- Partner B: Move 1 of the paper clips, add the numbers, and cover the sum with a counter.
- Take turns. The first partner to cover 5 squares in a row wins.
Capture Squares Stage 2 Gameboard

Directions:
- On your turn:
  - Choose 2 number cards. Find the difference.
  - Choose a square on the gameboard that shows that number. Draw one line connecting any 2 dots around the number.
  - If you can’t draw a line, choose 2 new cards.
  - If you draw a line that finishes a square around a number, shade in that box with your color.
- Take turns with your partner. The first player to shade in 3 boxes wins.
Capture Squares Stage 4 Gameboard

Directions:

- On your turn:
  - Spin the spinner and take 1 number card. Subtract the number on the card from the number on the spinner.
  - Choose a square on the gameboard that shows that number. Draw one line connecting any 2 dots around the number.
  - If you can't draw a line, spin again and take a new card.
  - If you draw a line that finishes a square around a number, shade in that box with your color.
- Take turns with your partner. The first player to shade in 3 boxes wins.
Shake and Spill Stage 4 and 5 Recording Sheet (G1 and 2)

Directions:
- Choose how many counters to put in the cup.
- Partner A: Close your eyes.
- Partner B: Shake and spill. Cover up the yellow counters with the cup.
- Partner A: Open your eyes and figure out how many counters are under the cup.
- Partner B: Show how many.
- Both partners: Record an equation.
- Switch roles and start the next round.

<table>
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<tr>
<th>round:</th>
<th>Write an equation to represent the red and yellow counters.</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
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</tbody>
</table>
Math Stories Stage 1 and 4 Pictures

Picture D
Math Stories Stage 1 and 4 Pictures

Picture G
Math Stories Stage 4 Recording Sheet

Directions:
- Partner A:
  - Choose one of the pictures.
  - Make up a story problem with addition or subtraction about the picture.
- Partner B: Solve the problem and write an equation that matches the story.
- Take turns.

<table>
<thead>
<tr>
<th>Picture:_________</th>
<th>Equation: ____________________________</th>
</tr>
</thead>
<tbody>
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<td>Equation: ____________________________</td>
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<td>Equation: ____________________________</td>
</tr>
<tr>
<td>Picture:_________</td>
<td>Equation: ____________________________</td>
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</table>
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  - Adding and Subtracting within 100
  - Measuring Length
- Addition and Subtraction on the Number Line
  - Numbers to 1,000
  - Geometry, Time, and Money
- Adding and Subtracting within 1,000
- Equal Groups
- Putting it All Together

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