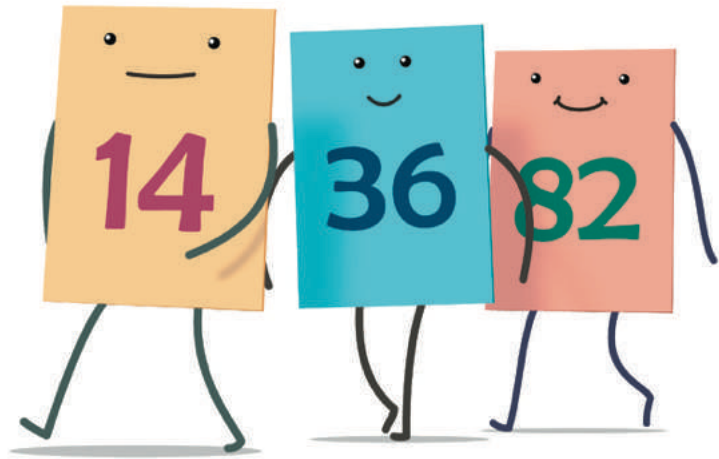




Numbers to 1,000



Teacher Guide



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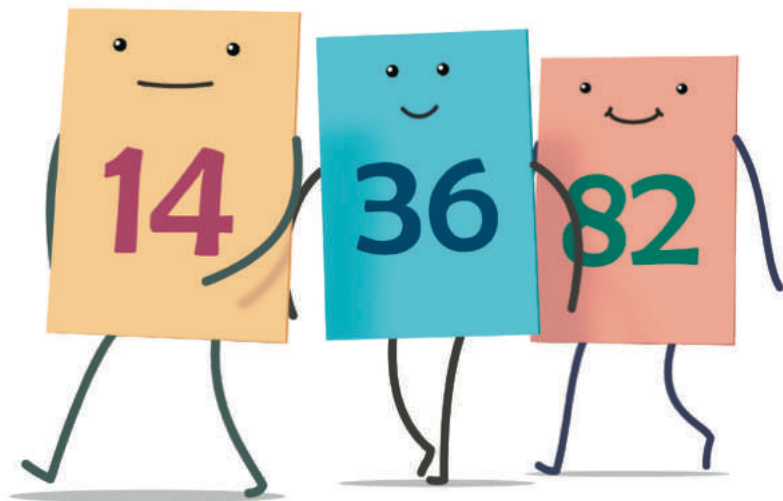
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Numbers to 1,000

Table of Contents

Introduction	i
Unit Overview	1
Section Overview	2
Center Overview	8
Lessons Plans and Student Task Statements:	
Section A: Lessons 1–7 The Value of Three Digits	18
Section B: Lessons 8–14 Compare and Order	
Numbers within 1,000	73
Teacher Resources	129
Family Support Materials	
Assessments	
Cool Downs	
Instructional Masters	



Numbers to 1,000
Teacher Guide
Core Knowledge Mathematics™

Unit 5: Numbers to 1,000

At a Glance

Unit 5 is estimated to be completed in 13-16 days including 2 days for assessment.

This unit is divided into two sections including 11 lessons and 3 optional lessons.

- Section A—The Value of Three Digits (Lessons 1-7)
- Section B—Add and Subtract on a Number Line (Lessons 8-14)

On pages 6-7 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.

- Greatest of Them All
- Mystery Number
- Jump the Line
- Number Puzzles: Addition and Subtraction
- Get Your Numbers in Order

Unit 5: Numbers to 1,000

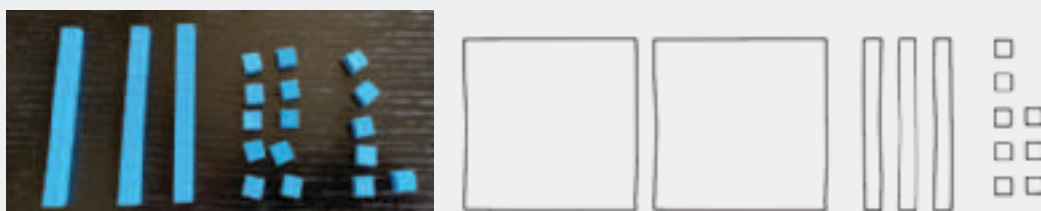
Unit Learning Goals

- Students extend place value understanding to three-digit numbers.

In this unit, students extend their knowledge of the units in the base-ten system to include hundreds.

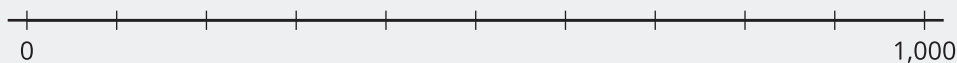
In grade 1, students learned that a ten is a unit made up of 10 ones, and two-digit numbers are formed using units of tens and ones. Here, they learn that a hundred is a unit made up of 10 tens, and three-digit numbers are formed using units of hundreds, tens, and ones.

To make sense of numbers in different ways and to build flexibility in reasoning with them, students work with a variety of representations: base-ten blocks, base-ten diagrams or drawings, number lines, expressions, and equations.



At the start of the unit, students express a quantity in terms of the number of units represented by base-ten blocks (3 hundreds, 14 tens, 22 ones). They practice composing larger units from smaller units and representing the value using the fewest number of each unit (4 hundreds, 6 tens, 2 ones). They connect the number of units to three-digit numerals (462).

Next, students make sense of three-digit numbers on the number line. In a previous unit, students learned about the structure of the number line by representing whole numbers within 100 as lengths from zero. Here, they get a sense of the relative distance of whole numbers within 1,000 from zero. Students learn to count to 1,000 by skip-counting on a number line by 10 and 100. They also locate, compare, and order three-digit numbers on a number line.



Throughout the unit, the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 are referred to as multiples of 100 for simplicity. The same is true for multiples of 10. “Multiple” is not a word that students are expected to understand or use in grade 2. Students can describe the numbers as some number of tens or hundreds, such as “20 tens” or “3 hundreds.”

Section A: The Value of Three Digits

Standards Alignments

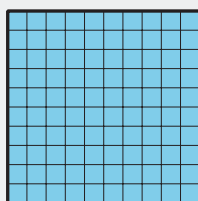
Addressing	2.MD.B.6, 2.NBT.A, 2.NBT.A.1, 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2, 2.NBT.A.3, 2.NBT.B.5, 2.OA.B.2
Building Towards	2.NBT.A.1, 2.NBT.A.4

Section Learning Goals

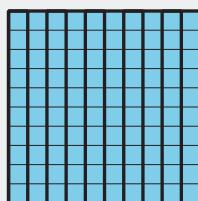
- Read, write, and represent three-digit numbers using base-ten numerals and expanded form.
- Use place value understanding to compose and decompose three-digit numbers.

This section introduces the unit of a hundred. Students begin by analyzing the large square base-ten block, and its corresponding base-ten diagram, to recognize 100 as 1 hundred, 10 tens, or 100 ones.

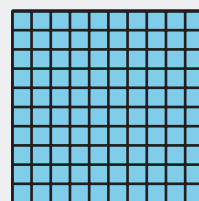
1 hundred



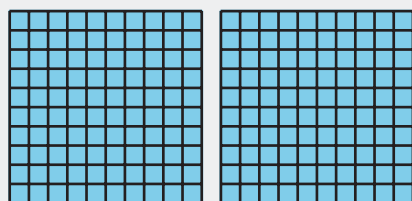
10 tens



100 ones



Students learn that the digits in three-digit numbers represent amounts of hundreds, tens, and ones. They use this insight to write numbers and represent quantities in different forms—base-ten numerals, words, and expanded form. Students see that they can compose a hundred with 10 tens, just as they can compose a ten with 10 ones, and that a quantity can be expressed in many ways.



2 hundreds 3 tens 8 ones
two hundred thirty-eight
 $200 + 30 + 8$
238

Composing larger units from smaller units allows students to express a quantity using the fewest number of each unit, which reinforces the meaning of the digits in a three-digit number and prepares students to add and subtract such numbers later. It also lays the foundation for generalizing the relationship between the digits of other numbers in the base-ten system in future grades.

 PLC: Lesson 2, Activity 2, How Many Hundreds?

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Supporting)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

Section B: Compare and Order Numbers within 1,000

Standards Alignments

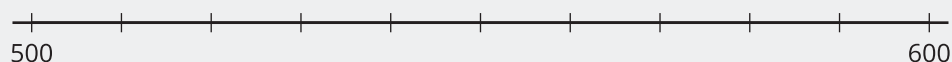
Addressing	2.MD.B.6, 2.NBT.A, 2.NBT.A.1, 2.NBT.A.2, 2.NBT.A.3, 2.NBT.A.4, 2.NBT.B.8
Building Towards	2.NBT.A.2, 2.NBT.A.4

Section Learning Goals

- Compare and order three-digit numbers using place value understanding and the relative position of numbers on a number line.
- Represent whole numbers up to 1,000 as lengths from 0 on a number line.

In this section, students use number line diagrams to deepen their understanding of numbers to 1,000. They begin by skip-counting on the number line to build a sense of the relative position of numbers to 1,000. They recall the structure of the number line from a previous unit and use it, along with their understanding of place value, to locate, compare, and order numbers on the number line.

This number line, for example, is divided into intervals of 10 units, representing 10 tens from 500 to 600. In a task, students may be asked to locate the number 540 and estimate the location of the number 546.

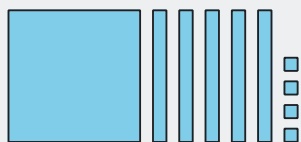


As students locate or estimate the location of three-digit numbers on number lines such as these, they show an understanding of a number's relative distance from zero and the place value of the digits. This understanding helps them to compare and order three-digit numbers. Students see that the numbers get larger as they move from left to right on the line.

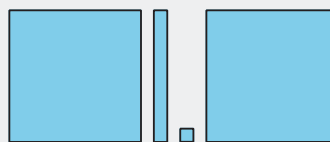
To compare and order three-digit numbers written as base-ten numerals, students also continue to use base-ten blocks, base-ten diagrams, or other representations that make sense to them. They write the comparisons using the symbols, $>$, $<$, and $=$.

Who has more? How do you know?

Mai



Tyler



Suggested Centers

- Mystery Number (1–4), Stage 2: Three-digit Numbers (Addressing)
- Greatest of Them All (1–5), Stage 2: Three-digit Numbers (Addressing)
- Get Your Numbers in Order (1–5), Stage 1: Two-digit Numbers (Supporting)
- Jump the Line (2–5), Stage 1: Add and Subtract within 100 (Supporting)
- Get Your Numbers in Order (1–5), Stage 2: Three-digit Numbers (Addressing)

Throughout the Unit

The warm-up activities enable students to connect what they know about counting and numbers to concepts they are learning in the unit. Choral Count, How Many Do You See? and Estimation Exploration routines are used to support student understanding of the sequential order of numbers and place value as they consider three-digit numbers.

The Number Talk activities focus on adding by place value and adding and subtracting multiples of 10, building on skills developed when representing addition and subtraction on the number line. The True or False activities allow students to connect equations to expanded form, and use place value understanding to compare values.

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

lesson 3	lesson 10	lesson 12
$42 + 42$	$36 + 40$	$80 - 50$
$21 + 63$	$46 + 30$	$87 - 50$
$50 + 34$	$59 + 40$	$76 - 40$
$48 + 36$	$69 + 30$	$66 - 30$

Here is a sampling of True or False warm-ups in the unit.

lesson 5	lesson 7	lesson 11
$800 + 90 + 7 = 897$	$100 > 99$	$86 > 80 + 4$
$156 = 50 + 100 + 6$	$100 < 99 + 1$	$400 + 40 + 6 < 846$
$407 = 70 + 400$	$98 + 3 > 100$	$330 < 300 + 3$
$632 = 22 + 10 + 600$	$50 + 50 + 50 > 100$	$500 + 50 > 505$

Materials Needed

LESSON	GATHER	COPY
A.1	<ul style="list-style-type: none"> Base-ten blocks 	<ul style="list-style-type: none"> none
A.2	<ul style="list-style-type: none"> Base-ten blocks 	<ul style="list-style-type: none"> none
A.3	<ul style="list-style-type: none"> Base-ten blocks Tools for creating a visual display 	<ul style="list-style-type: none"> none
A.4	<ul style="list-style-type: none"> Base-ten blocks 	<ul style="list-style-type: none"> none
A.5	<ul style="list-style-type: none"> Base-ten blocks Number cubes 	<ul style="list-style-type: none"> none
A.6	<ul style="list-style-type: none"> Base-ten blocks Chart paper Tools for creating a visual display 	<ul style="list-style-type: none"> none
A.7	<ul style="list-style-type: none"> Materials from previous centers Number cards 0–10 	<ul style="list-style-type: none"> Mystery Number Stage 2 Directions (groups of 2)
B.8	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> none
B.9	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> none
B.10	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> none
B.11	<ul style="list-style-type: none"> Number cards 0–10 	<ul style="list-style-type: none"> Greatest of Them All Stage 2 Recording Sheet (groups of 1)
B.12	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> none

B.13	<ul style="list-style-type: none">● Dry erase markers● Materials from previous centers● Number cards 0–10● Sheet protectors	<ul style="list-style-type: none">● Get Your Numbers in Order Stage 2 Gameboard (groups of 2)
B.14	<ul style="list-style-type: none">● Collections of objects● Sticky notes	<ul style="list-style-type: none">● none

Center: Greatest of Them All (1–5)

Stage 1: Two-digit Numbers

Lessons

- Grade2.5.A6 (addressing)
- Grade2.5.A1 (supporting)
- Grade2.5.A2 (supporting)
- Grade2.5.A3 (supporting)
- Grade2.5.A4 (supporting)
- Grade2.5.A5 (supporting)

Stage Narrative

Students make two-digit numbers.

Variation:

Students try to make the number with the least value.

Standards Alignments

Addressing 1.NBT.B.3

Materials to Gather

Number cards 0–10

Materials to Copy

Greatest of Them All Stage 1 Recording Sheet
(groups of 1)

Stage 2: Three-digit Numbers

Lessons

- Grade2.5.B8 (addressing)
- Grade2.5.B12 (addressing)
- Grade2.5.B14 (addressing)

Activities

- Grade2.5.B11.2 (addressing)
- Grade2.5.B13.2 (addressing)

Stage Narrative

Students make three-digit numbers.

Variation:

Students try to make the number with the least value.

Standards Alignments

Addressing 2.NBT.A

Materials to Gather

Number cards 0–10

Materials to Copy

Greatest of Them All Stage 2 Recording Sheet
(groups of 1)

Stages used in Grade 1

Stage 1

Addressing

- Grade1.4.C
- Grade1.4.D

Supporting

- Grade1.5.A

Center: Mystery Number (1–4)

Stage 1: Two-digit Numbers

Lessons

- Grade2.5.A1 (supporting)
- Grade2.5.A2 (supporting)
- Grade2.5.A3 (supporting)
- Grade2.5.A4 (supporting)
- Grade2.5.A5 (supporting)
- Grade2.5.A6 (supporting)

Stage Narrative

Students pick two cards and make a mystery two-digit number. Students give clues based on the sentence starters.

Standards Alignments

Addressing 1.NBT.B

Materials to Gather

Number cards 0–10

Materials to Copy

Mystery Number Stage 1 Directions (groups of 2)

Stage 2: Three-digit Numbers

Lessons

- Grade2.5.B8 (addressing)
- Grade2.5.B9 (addressing)
- Grade2.5.B10 (addressing)
- Grade2.5.B12 (addressing)
- Grade2.5.B14 (addressing)

Activities

- Grade2.5.A7.1 (addressing)
- Grade2.5.A7.2 (addressing)
- Grade2.5.B13.2 (addressing)

Stage Narrative

Students pick three cards and make a mystery three-digit number. Students give clues based on the sentence starters.

Standards Alignments

Addressing 2.NBT.A

Materials to Gather

Number cards 0–10

Materials to Copy

Mystery Number Stage 2 Directions (groups of 2)

Stages used in Grade 1

Stage 1

Addressing

- Grade1.4.D

Supporting

- Grade1.5.C

Center: Jump the Line (2–5)

Stage 1: Add and Subtract within 100

Lessons

- Grade2.5.B9 (supporting)
- Grade2.5.B10 (supporting)
- Grade2.5.B11 (supporting)
- Grade2.5.B12 (supporting)

Activities

- Grade2.5.A7.2 (supporting)

Stage Narrative

Both players start at 30 on a number line marked by 1. Spinners show adding or subtracting 10, 5, or 1.

Standards Alignments

Addressing 2.MD.B.6

Materials to Gather

Dry erase markers, Paper clips, Sheet protectors

Materials to Copy

Jump the Line Stage 1 Gameboard (groups of 2),
Jump the Line Stage 1 Spinners (groups of 2)

Additional Information

Each group of 2 needs a sheet protector, a dry erase marker, and 2 paper clips.

Center: Number Puzzles: Addition and Subtraction (1–4)

Stage 2: Within 20

Activities

- Grade2.5.A7.2 (supporting)

Stage Narrative

Students work together to use digit cards to make addition and subtraction equations within 20 true. Each digit card may only be used one time on a page.

Standards Alignments

Addressing 1.OA.C.6, 1.OA.D.8, 2.OA.B.2

Materials to Copy

Number Puzzles Addition and Subtraction Stage 2
Gameboard (groups of 1), Number Puzzles Digit
Cards (groups of 2)

Stage 3: Within 100 without Composing

Activities

- Grade2.5.A7.2 (supporting)

Stage Narrative

Students work together to use digit cards to make addition and subtraction equations within 100 without composing true. Each digit card may only be used one time on a page.

Standards Alignments

Addressing 1.NBT.C.4, 1.OA.D.8

Materials to Copy

Number Puzzles Addition and Subtraction Stage 3
Gameboard (groups of 2), Number Puzzles Digit
Cards (groups of 2)

Stage 4: Within 100 with Composing

Activities

- Grade2.5.A7.2 (supporting)

Stage Narrative

Students use digit cards to make addition and subtraction equations true. They work with sums and differences within 100 with composing and decomposing. Each digit card may only be used one time on a page.

Standards Alignments

Addressing 1.NBT.C.4, 1.OA.D.8, 2.NBT.B.5

Materials to Copy

Number Puzzles Addition Stage 4 Gameboard (groups of 2), Number Puzzles Digit Cards (groups of 2)

Stages used in Grade 1

Stage 1

Addressing

- Grade1.2.D
- Grade1.3.C

Supporting

- Grade1.3.A
- Grade1.3.B
- Grade1.4.A
- Grade1.4.B
- Grade1.5.A
- Grade1.5.B
- Grade1.5.C

Stage 2

Addressing

- Grade1.3.B
- Grade1.3.C

Supporting

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

Stage 3

Addressing

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

Stage 4

Addressing

- Grade1.5.C

Center: Get Your Numbers in Order (1–5)

Stage 1: Two-digit Numbers

Lessons

- Grade2.5.B8 (supporting)
- Grade2.5.B9 (supporting)
- Grade2.5.B10 (supporting)
- Grade2.5.B11 (supporting)
- Grade2.5.B12 (supporting)

Stage Narrative

Students remove the cards that show 10 before they start. Then they choose two number cards and make a two-digit number. Students write their number in any space on the board, as long as the numbers from left to right go from least to greatest. If students cannot place their number, they get a point. The player with the fewest points when the board is filled is the winner.

Standards Alignments

Addressing 1.NBT.B.3

Materials to Gather

Dry erase markers, Number cards 0–10, Sheet protectors

Materials to Copy

Get Your Numbers in Order Stage 1 Gameboard (groups of 2)

Stage 2: Three-digit Numbers

Lessons

- Grade2.5.B14 (addressing)

Activities

- Grade2.5.B13.1 (addressing)
- Grade2.5.B13.2 (addressing)

Stage Narrative

Students remove the cards that show 10 before they start. Then they choose three number cards and make a three-digit number. Students write their number in any space on the board, as long as the numbers from left to right go from least to greatest. If students cannot place their number, they get a point. The player with the fewest points when the board is filled is the winner.

Standards Alignments

Addressing 2.NBT.A.4

Materials to Gather

Dry erase markers, Number cards 0–10, Sheet protectors

Materials to Copy

Get Your Numbers in Order Stage 2 Gameboard (groups of 2)

Stages used in Grade 1

Stage 1

Addressing

- Grade1.4.C
- Grade1.4.D

Supporting

- Grade1.5.C
- Grade1.6.A

Section A: The Value of Three Digits

Lesson 1: How Do We Compose a Hundred?

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.1.a, 2.NBT.A.2

Building Towards 2.NBT.A.1

Teacher-facing Learning Goals

- Recognize that each hundred is composed of 100 ones or 10 tens.

Student-facing Learning Goals

- Let's compose a hundred.



Lesson Purpose

The purpose of this lesson is for students to make sense of a hundred as a unit composed of 10 tens or 100 ones.

In grade 1, students were introduced to a ten as a unit made of 10 ones. They used that understanding to represent two-digit numbers and add within 100. Students used connecting cubes to make and break apart two-digit numbers. In previous units in grade 2, students used the words compose and decompose as they made and broke apart tens when they added and subtracted within 100.

In this lesson, students are introduced to the unit of a hundred. Building on the understanding that they can use 10 ones to compose a ten, students learn they can compose a hundred using 10 tens.

Access for:

Students with Disabilities

- Engagement (Activity 1)

English Learners

- MLR8 (Activity 2)

Instructional Routines

Choral Count (Warm-up)

Materials to Gather

- Base-ten blocks: Activity 1, Activity 2

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

What unfinished learning or misunderstandings do your students have about composing tens and place value? How did you leverage those misconceptions in a positive way to further the understanding of the class?

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

🕒 5 min

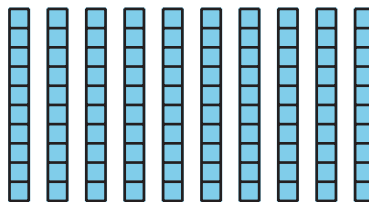
Fewer Blocks

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.1.a

Student-facing Task Statement

Andre represented a number with base-ten blocks.



1. What number did Andre represent?
2. How could he represent this number with fewer blocks? Show your thinking with words or a base-ten diagram.

Student Responses

1. 100
2. Sample responses:
 - Student draws a large square to represent a 1 hundred.
 - He could use 1 hundred block. It's the same as 10 tens.

----- Begin Lesson -----

Warm-up

🕒 10 min

Choral Count: Count Beyond 100

Standards Alignments

Addressing	2.NBT.A.2
Building Towards	2.NBT.A.1

The purpose of this Choral Count is for students to practice counting from 90 to 120 by 1 and notice patterns in the count. In this unit, students learn to identify the value of digits, as they write three-digit numbers through 999. In grade 1, students counted beyond 100, but did not consider a hundred as a unit and did not explore the value of each digit by place through the hundreds. Students notice and describe the repeating patterns within the base-ten system (MP7, MP8).

Instructional Routines

Choral Count

Student Responses

- Record 10 numbers in each row. Then start a new row directly below.

Sample responses:

- After 99, each number has 3 digits.
- The numbers in each column have the same

Launch

- "Count by 1, starting at 90."
- Record as students count. Record 10 numbers in each row. Then start a new row directly below.
- Stop counting and recording at 120.

digit in the ones place.

- In the ones place, I see 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and it repeats in each row.
- The digits in the tens place in each column have 9, 0, 1 going down.
- The numbers are changing by 10 going down each column.

Activity

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

Synthesis

- “What is a number we could place in the fourth row? Use a pattern we discussed to explain how you know your number would belong.” (You could put 122 in the group with 92, 102, and 112. The ones place has a 2, it is getting bigger by 10, and I think the 1 should stay the same like in 102 and 112.)

Activity 1

🕒 20 min

How Do We Make a Hundred?

Standards Alignments

Addressing 2.NBT.A.1.a

The purpose of this activity is to introduce students to a new unit, the hundred. Students used connecting cubes to make tens in grade 1 and used tens and ones to count to and represent numbers within 120.

In an earlier unit, students were introduced to base-ten blocks and used base-ten diagrams to represent sums and differences within 100. Students build on this understanding as they use blocks to represent a starting number (96) and add ones until they reach a total value of 100. As students discover they have 10 tens, monitor for language they use to describe the total value of the blocks and the connections they make to their previous work with ones, tens, and three-digit numbers (MP7).

🕒 Access for Students with Disabilities

Engagement: Provide Access by Recruiting Interest. Give the students a context to connect to their own lives. Tell the students that the base-ten blocks represent gum. The ones are single sticks of gum and the tens are packs of gum.

Supports accessibility for: Conceptual Processing, Attention

Materials to Gather

Base-ten blocks

Student-facing Task Statement

1. How many do you see? How do you see them?



2. Andre added more blocks.



- a. What is the value of Andre's blocks now?
 - b. How many tens and ones are in this number?
3. Andre made the same number with the fewest amount of blocks possible. Draw a base-ten diagram to show what Andre's number looks like now. Use your base-ten blocks to help.

Launch

- Groups of 2
- Give students access to base-ten blocks.
- Display photo of 8 tens and 16 ones.
- "Andre was using base-ten blocks to represent numbers. How many do you see? How do you see them?" (96. I see 8 tens and 16 ones. I see it as 9 tens and 6 ones.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share responses.

Activity

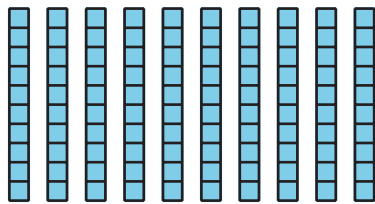
- "Work with a partner to follow along and see what Andre discovered as he adds more blocks."
- 10 minutes: partner work time
- Monitor for students who explain that the value is 100 by:
 - counting by 1 from 80 or by 1 from 96
 - counting by 10

Synthesis

- Invite previously identified students to share how they know the value of Andre's blocks is 100.
- "If Andre used the fewest number of blocks, how many tens did he use?" (He had 10 tens.)
- "What if Andre wanted to use the greatest amount of blocks to show this number? What would he do?" (He'd decompose all the tens to use only ones. He'd use 100)

Student Responses

1. Answers vary. Sample responses:
 - 96
 - 8 tens and 16 ones
 - 9 tens and 6 ones
2.
 - a. 100
 - b. Answers vary. Sample responses:
 - 8 tens and 20 ones
 - 10 tens and 0 ones
 - 10 tens or 100 ones
- 3.



ones.)

- "In this activity, you showed you know that 10 ones is the same as 1 ten. Just like 10 ones is the same as 1 ten, 10 tens is the same as 1 hundred."
- "A hundred is a unit that is made up of 10 tens."

Advancing Student Thinking

If students represent 100 with a diagram that includes tens and ones, consider asking:

- "Can you explain how your diagram represents Andre's total value using the fewest number of blocks possible?"
- "Is there a way to represent the same amount without any ones?"

Activity 2

🕒 15 min

Different Ways to See 100

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.1.a

The purpose of this activity is for students to make sense of 100 when represented as 100 ones, 10 tens, or 1 unit of a hundred with base-ten blocks or base-ten diagrams. Students compare different ways to describe 100 and connect the descriptions to base-ten diagrams (MP7). Students understand that a hundred is made up of 10 tens and can also be thought of as a unit of 100 ones.

Access for English Learners

MLR8 Discussion Supports. As students explain their reasoning for each match to their partner, display the following sentence frames for all to see: “I noticed _____, so I matched” Encourage students to challenge each other when they disagree.

Advances: Conversing

Materials to Gather

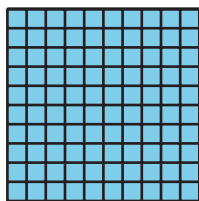
Base-ten blocks

Required Preparation

- Each group of 2 students needs access to at least 1 hundred block.

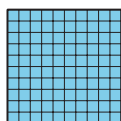
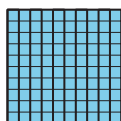
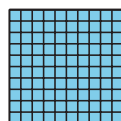
Student-facing Task Statement

Three students were looking at 100 small squares arranged like this:



- Match the diagrams to the statements. Label each diagram with A, B, or C. Be prepared to explain your matches.

- Priya said, “I see 100 ones.”
- Kiran said, “I see 10 tens.”
- Lin said, “I see 1 hundred.”



Launch

- Groups of 2
- Gives students access to base-ten blocks including at least 1 block that represents 100.
- “In the last activity, we saw that we can use 10 tens to represent 100.”
- “There is a base-ten block that represents the unit of a hundred.”
- Display a tens block.
- “We use this block to represent a ten.”
- Display a hundred block.
- “We can use this block to represent a hundred.”

Activity

- “In this activity, think about the different ways to describe 100 and match the students to their diagrams.”

2. Represent $100 + 11$ with blocks or a diagram.

Student Responses

1. C, B, A
2. Students show 1 hundred, 1 ten, and 1 one or 1 hundred and 11 ones.

- 5 minutes: independent work time
- “Share your matches with your partner and explain how you knew.”
- 3 minutes: partner discussion
- “Now use your blocks to show $100 + 11$.”
- 2 minutes: partner work time
- Monitor for students who represent 100 with 1 hundred block and students who represent 100 with tens.

Synthesis

- “How did you know which diagram showed the way Lin saw the blocks?” (Lin said she saw 1 hundred, so she was thinking about the whole thing as a unit.)
- Invite previously identified students to share how they represented $100 + 11$.
- “How could you represent the 100 in the expression with the fewest blocks?” (I could use 1 hundred block.)

Advancing Student Thinking

If students match the diagrams to statements that are not the best match, consider asking:

- “How did you decide which statement matched each diagram?”
- “What is the same or different about these diagrams?”

Lesson Synthesis

🕒 10 min

“Today we learned about a unit called a hundred. Kiran, Lin, and Priya described 100 in different ways.”

Display the base-ten diagrams from the previous activity as students share to reinforce the description.

“Complete the following statements with your partner.”

Display:

"____ ones is the same as one hundred."

"____ tens is the same as one hundred."

Share and record responses.

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Supporting)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

Complete Cool-Down

Response to Student Thinking

Students draw a small square with no label or students write that Andre could use 1 block without specifying the unit.

The work of this lesson builds on an understanding of unitizing a ten developed in a prior unit.

Next Day Support

- Launch warm-up or activities by highlighting important representations from previous lessons.

Prior Unit Support

Grade 1, Unit 4, Section B: Tens and Ones

Lesson 2: Make Hundreds

Standards Alignments

Addressing 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2

Teacher-facing Learning Goals

- Read, write, and represent multiples of 100.

Student-facing Learning Goals

- Let's represent hundreds in different ways.

Lesson Purpose

The purpose of this lesson is for students to represent hundreds in different ways.

In a previous lesson, students learned that a hundred is composed of 10 tens or 100 ones.

In this lesson, students deepen their understanding of a hundred as a unit. They learn that for every 10 tens, they can compose 1 hundred. Students notice that it may be easier to count the hundreds rather than count the tens to find a total value. Students begin to recognize and describe the patterns in the structure of the base-ten system (MP7, MP8). They recognize that 10 tens make 1 hundred, 30 tens make 3 hundreds, 60 tens make 6 hundreds, etc. as they build numbers with tens and exchange them for hundreds. Students identify the multiples of 100 written as numerals and begin to make connections between base-ten blocks and the value of each digit in a three-digit number.

Access for:



Students with Disabilities

- Action and Expression (Activity 2)



English Learners

- MLR8 (Activity 1)

Instructional Routines

Choral Count (Warm-up)

Materials to Gather

- Base-ten blocks: Activity 1, Activity 2

Lesson Timeline

Warm-up	10 min
Activity 1	20 min

Teacher Reflection Question

As students worked in their small groups today, whose ideas were heard, valued, and accepted? How can you adjust the group structure

Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

tomorrow to ensure each student's ideas are a part of the collective learning?

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

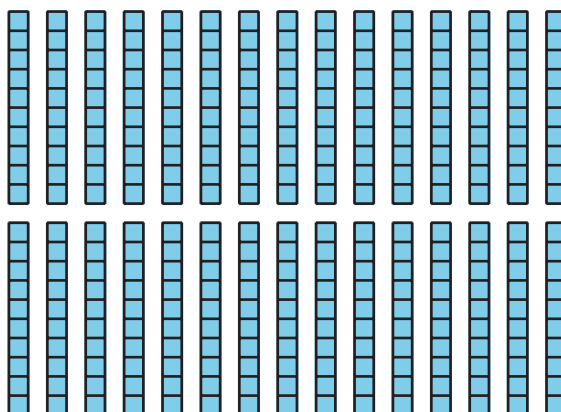
🕒 5 min

How Many?

Standards Alignments

Addressing 2.NBT.A.1.a, 2.NBT.A.1.b

Student-facing Task Statement



1. How many do you see? _____
2. How could you represent the same value in a different way? Show your thinking using a diagram or words.

Student Responses

1. Answers vary. Sample responses:
 - 30 tens
 - 300
 - 3 hundreds
2. Sample response: Students draw 3 squares and label or explain them as 3 hundreds.

 Begin Lesson

Warm-up

⌚ 10 min

Choral Count: Count by 10

Standards Alignments

Addressing 2.NBT.A.2

The purpose of this Choral Count is for students to practice counting by 10 beyond 120 and notice patterns in the count. These understandings help students develop fluency and will be helpful later in this lesson when students will need to be able to recognize multiples of 100 written as numerals and make connections between groups of 10 tens and hundreds.

Instructional Routines

Choral Count

Student Responses

- Record 10 numbers in each row. Then start a new row directly below.

Sample responses:

- The numbers in the first row have 2 digits. The numbers in the other rows have 3 digits.
- All the numbers have a 0 in the ones place.
- The numbers in each column are increasing by 100.

Launch

- "Count by 10, starting at 0."
- Record as students count. Record 10 numbers in each row. Then start a new row directly below.
- Stop counting and recording at 300.

Activity

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

Synthesis

- "Who can restate the pattern in different words?"

Activity 1

🕒 20 min

Make Hundreds

Standards Alignments

Addressing 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2

The purpose of this activity is for students to use groups of 10 tens to compose multiples of 100. Students use base-ten blocks to make a group of 10 tens and exchange it for 1 hundred. They find the total number of tens and represent the same quantity with hundreds. When students make connections between the number of tens and hundreds they need to represent each number and the digits in the three-digit number, they look for and express regularity in repeated reasoning (MP8).

If you do not have enough base-ten blocks for groups of 4, you can make larger groups of students to use fewer blocks.

Access for English Learners

MLR8 Discussion Supports. Synthesis: At the appropriate time, give students 2–3 minutes to make sure that everyone in their group can explain what they notice about the number of tens and the number of hundreds in each problem. Invite groups to rehearse what they will say when they share with the whole class.

Advances: Speaking, Conversing

Materials to Gather

Base-ten blocks

Required Preparation

- Each group of 4 students will need at least 50 ten blocks. Do not include hundreds blocks for this activity.

Student-facing Task Statement

- Build each number using base-ten blocks.
Record how many tens blocks you use.

a. Build 90. _____ tens

Launch

- Groups of 4
- Give each group at least 50 base-ten blocks.
- "Yesterday, we looked at different ways to

b. Build 110. _____ tens

c. Build 150. _____ tens

2. How many base-ten blocks would you need to build 200?

_____ tens

3. How many base-ten blocks would you need to build 300?

_____ tens

4. How many base-ten blocks would you need to build 300 if you could use 1 hundreds block?

1 hundred _____ tens

5. How many tens would you need to build 300 if you could use 2 hundreds blocks?

2 hundreds _____ tens

6. How many tens would you need to build 300 if you could use only hundreds blocks?

_____ hundreds _____ tens

Student Responses

1.
 - a. 9 tens
 - b. 11 tens
 - c. 15 tens
2. 20 tens
3. 30 tens
4. 20 tens
5. 10 tens
6. 3 hundreds, 0 tens

represent 100 with tens, ones, and as 1 unit called a hundred."

Activity

- "Today, we are going to use base-ten blocks to represent numbers that are larger than 100."
- "Work with your group to represent the numbers shown with your base-ten blocks."
- 10 minutes: small-group work time
- Monitor for groups that discuss ways to represent 300 by:
 - using base-ten blocks and organizing into groups of 10 tens
 - reasoning that if 1 hundred is 10 tens, then 2 hundreds is 20 tens, and 3 hundreds is 30 tens
 - connecting patterns in the number of tens to the numerals and digits.

Synthesis

- Invite previously identified students to share how they reasoned about ways to represent 300.
- "What did you notice about the number of tens and the number of hundreds?" (10 tens = 1 hundred, 20 tens = 2 hundreds, 30 tens = 3 hundreds)
- "How many hundreds would I have if I have 80 tens?" (8 hundreds)

Activity 2

🕒 15 min

How Many Hundreds?

👤 ↔ 👤 PLC Activity

Standards Alignments

Addressing 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2

The purpose of this activity is for students to make sense of representations of more than 1 hundred. Students recognize that base-ten diagrams can be used to represent hundreds even when all of the ones are not outlined. Students make connections between multiples of 10 and multiples of 100, as they consider the relationship between 70 tens and 7 hundreds. Students describe how grouping tens and counting units of 1 hundred help to count and represent large numbers.

🕒 Access for Students with Disabilities

Action and Expression: Internalize Executive Functions. Synthesis: Check for understanding by inviting students to rephrase how ones, tens, and hundreds can all be used to represent the number 700 in their own words. Keep a display of their responses to reiterate this content.

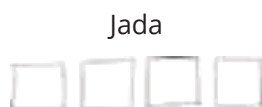
Supports accessibility for: Memory, Organization

Materials to Gather

Base-ten blocks

Student-facing Task Statement

Han and Jada represented the same number using base-ten blocks. They started base-ten diagrams, but ran out of time to finish them.



I only used
hundreds.
Total value: 700



I only used tens.
Total value: 700

1. Use base-ten blocks to show what each

Launch

- Groups of 2–4
- Give students access to base-ten blocks, including hundred blocks.

Activity

- “Han and Jada represented 700 using base-ten blocks, numbers, and words.”
- “They were both going to draw a base-ten diagram, but ran out of time.”
- “Represent each student’s work with base-ten blocks in your group.”

student's work would look like if they had time to finish it.



2. Explain how you know both ways of using base-ten blocks show 700.
3. Complete Jada's base-ten diagram.
4. Explain why you think Han ran out of time to finish his diagram.

Student Responses

1. Student work should show 7 hundreds blocks to show Jada's work and 70 tens blocks to show Han's work.
2. Sample responses:
 - I know Jada's way shows 700 because there are 7 hundreds blocks. Each block is 100, so you can count it by hundreds. 100, 200, 300, 400, 500, 600, 700.
 - I know Han's shows 700 because we organized the tens into groups of 10. Each group shows 1 hundred. We can just count our groups to make sure there are 7 groups.
3. Students should draw 3 squares to show 7 total squares.
4. Sample response: I think Han ran out of time because it would take a long time to draw 70 tens. He might not have had enough space. It took him too long to count out 70 tens.

- "Then, discuss each question together."
- 10 minutes: group work time
- Monitor for groups that organize their tens into groups of ten and count each group as 1 hundred.

Synthesis

- "How do you know that Jada's way shows 700?" (You could count each hundred block by 1. You could count the squares by 1. If there are 7 hundred blocks, then it shows 700.)
- Invite previously selected identified groups to share how they organized their blocks when using Han's way.

Advancing Student Thinking

If students count out 70 tens to show Han's work, but do not organize the tens into groups, consider asking:

- “What is the value of all these tens? How can you prove that?”
- “How could you organize the tens so it’s easier to see the total value?”

Lesson Synthesis

🕒 10 min

“Today we used base-ten blocks and diagrams to represent numbers that are much greater than 100.”

“Which way do you think was easier to represent 700, Jada’s way or Han’s way? Explain.” (Jada’s way. It’s faster to just count out 7 blocks than 70 blocks. It was easier to make sure we were showing 700.)

“Han’s way used 70 total blocks. How could you represent 700 with the greatest amount of blocks?” (You could use 700 ones.)

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Supporting)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

----- Complete Cool-Down -----

Response to Student Thinking

Students write a number other than 300, 3 hundreds, or 30 tens. For example, they write 30 instead of 30 tens.

Next Day Support

- During the launch of the next lesson, have students practice representing multiples of a hundred using base-ten blocks, tens, and hundreds.

Lesson 3: Compose Three-digit Numbers

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2, 2.NBT.B.5

Teacher-facing Learning Goals

- Compose three-digit numbers using place value understanding.

Student-facing Learning Goals

- Let's compose three-digit numbers.

Lesson Purpose

The purpose of this lesson is for students to use base-ten representations to build an understanding of the digits in three-digit numbers.

In previous units, students used base-ten blocks and diagrams to compose and decompose tens when adding and subtracting by place. In previous lessons, students learned that a hundred is a unit that is made up of 10 tens and used base-ten blocks to show composing a hundred with 10 tens.

In this lesson, students represent three-digit numbers that include an amount of hundreds, tens, and ones. In the first activity, students take inventory of the units represented by a collection of base-ten blocks. They use their understanding of the units of hundred and ten to determine how to represent the total value with the fewest number of blocks possible. In the second activity, students use base-ten diagrams to represent values using the fewest number of each unit possible and connect these representations to the meaning of each digit in a three-digit numeral. In both activities, look for the different ways students represent and record the value of their blocks for reference in the activity syntheses and in future lessons.

Access for:

Students with Disabilities

- Engagement (Activity 2)

Instructional Routines

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

Materials to Gather

- Base-ten blocks: Activity 1, Activity 2

- Tools for creating a visual display: Activity 1

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

In grade 1, students developed an understanding of the digits in a two-digit number. How did the work of this lesson reinforce that understanding? How did it build on that understanding?

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

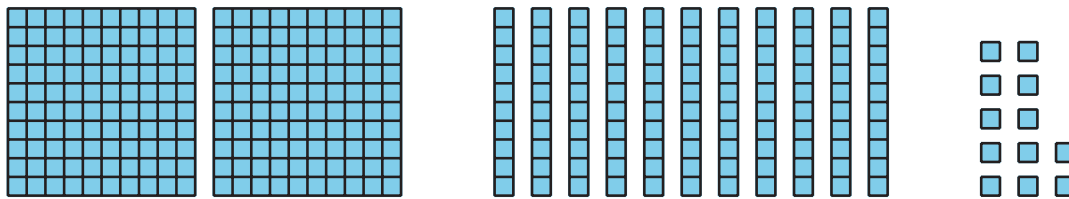
🕒 5 min

How Many Blocks?

Standards Alignments

Addressing 2.NBT.A.1.a

Student-facing Task Statement



How many of each?

- There are _____ hundreds.
- There are _____ tens.
- There are _____ ones.
- Draw a base-ten diagram to represent the same total value with the fewest number of blocks.

Student Responses

- There are 2 hundreds.
- There are 11 tens.

3. There are 12 ones.
4. Students draw 3 hundreds, 2 tens, and 2 ones.

----- Begin Lesson -----

Warm-up

🕒 10 min

Number Talk: Add Tens and Ones

Standards Alignments

Addressing 2.NBT.B.5

The purpose of this Number Talk is to elicit strategies and understandings students have for adding by place and composing a ten mentally. These understandings help students develop fluency and will be helpful later in this lesson when students describe base-ten representations by place and use the fewest number of base-ten blocks to represent a number.

Instructional Routines

Number Talk

Student-facing Task Statement

Find the value of each expression mentally.

- $42 + 42$
- $21 + 63$
- $50 + 34$
- $48 + 36$

Student Responses

- 84: I added $2 + 2$ and $40 + 40$. $80 + 4 = 84$.
- 84: I added $63 + 20 = 83$ and $83 + 1 = 84$.
- 84: I added 5 more tens to 34. $34 + 50 = 84$

Launch

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

Activity

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

- 84: I took 2 from 36 and added it to 48 to get to 50 ($48 + 2$) + 34). Then I thought of $50 + 34$ like the last expression.

Synthesis

- “What did you notice about the sums?” (The expressions were all different, but all had a value of 84.)
- “How could you explain why the third and fourth expressions have the same value?” (You could take 2 ones from 36 and add it to 48 to make $50 + 34$.)

Activity 1

🕒 20 min

Sort Blocks by Value

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2

In this activity, students sort base-ten blocks and record the total number of blocks they have by the unit each block represents. Students work together to look for ways to compose larger units from smaller units in order to represent the same value with the fewest number of blocks (MP7). They represent composing a hundred by exchanging 10 ten blocks for a hundred block and represent composing a ten by exchanging 10 one blocks for a ten block. In the synthesis, students compare different ways that groups represent the total value which may include representing the value as a three-digit number.

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

Instructional Routines

MLR7 Compare and Connect

Materials to Gather

Base-ten blocks, Tools for creating a visual display

Required Preparation

- Each group of 3–4 students will need a container with 2 hundreds, 28 tens, and 15 ones.
- Each group of 3–4 students will need access to additional base-ten blocks (hundred blocks and

ten blocks).

Student-facing Task Statement

1. Sort the blocks.
 - We have _____ hundreds.
 - We have _____ tens.
 - We have _____ ones.
2. Represent the same value with the fewest number of blocks possible.
 - We have _____ hundreds.
 - We have _____ tens.
 - We have _____ ones.
3. Represent the value of your blocks using base-ten diagrams, words, or numbers.



Student Responses

1. 2 hundreds. 28 tens. 15 ones.
2. 4 hundreds. 9 tens. 5 ones.
3. Sample responses:
 - 495
 - 400, 90, 5
 - $400 + 90 + 5$
 - 4 hundreds, 9 tens, 5 ones

Launch

- Groups of 3–4
- Give each group a container of blocks, access to base-ten blocks, and supplies for making a group display.

Activity

- “Your group has a container of base-ten blocks.”
- “Sort the blocks by the unit they represent and record the number of each type of block on your paper.”
- “Work together to figure out how to represent the same total value using the fewest number of blocks possible.”
- 6 minutes: small-group work time

MLR7 Compare and Connect

- “Create a visual display to show the total value of the blocks. Include details such as diagrams, labels, and numbers to help others understand your thinking.”
- 2–5 minutes: group work time
- “As you look at other groups’ representations, look for different ways groups show the value. Which ways are the same as your group’s representation? Which ways are different? How do you know they represent the same value?”
- 5 minutes: gallery walk
- “Discuss any revisions you would like to make to your representations with your group.”
- 1–2 minutes: small-group work time
- Monitor for students who:
 - create a base-ten diagram with the fewest amount of blocks represented

- write 4 hundreds, 9 tens, 5 ones
- write 495
- use an expression such as $400 + 95$ or $400 + 90 + 5$

Synthesis

- Display previously identified students' representations.
- "What is the same and what is different between the ways groups represented the total value of the blocks?" (They each show 4 hundreds, 9 tens, and 5 ones. Some just use diagrams, some use only digits, some use diagrams, numbers, and expressions.)

Advancing Student Thinking

If students represent their number with 10 or more of any unit, consider asking:

- "How do you know that you have used the fewest number of blocks possible?"
- "How can you combine the tens or ones so you don't use as many of the base-ten blocks?"

Activity 2

🕒 15 min

The Same But Different

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.1.a, 2.NBT.A.1.b, 2.NBT.A.2

In this activity, students build on their work with base-ten blocks in previous activities to use base-ten diagrams to represent a value using the fewest number of each unit possible. They first interpret images of students' representations of a number using base-ten blocks. When representing the same value, students may choose to draw the original representation and show composing units by circling groups of 10 tens or 10 ones. Others may choose other methods, such as circling or labeling the images to show ways to compose a larger unit or by using what

they have learned about patterns in units from previous lessons. In the synthesis, students connect the 3 digits in a three-digit numeral to their representations (MP7).

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. Consider asking specifically about the ones first to decide whether a group of ten can be made. Then move into the tens and make connections to the work done with the ones.

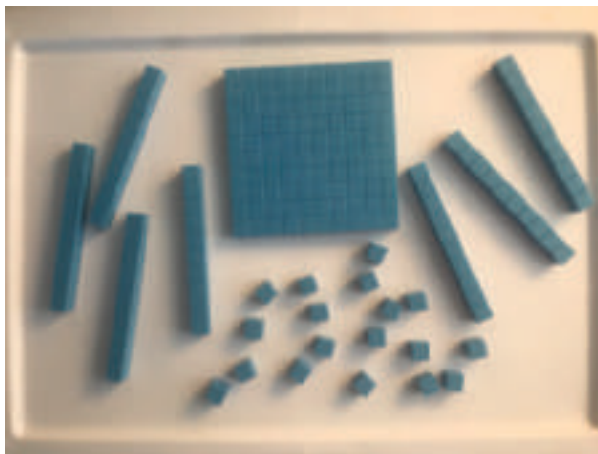
Supports accessibility for: Organization

Materials to Gather

Base-ten blocks

Student-facing Task Statement

Mai's Blocks



1. Mai has ____ hundreds ____ tens ____ ones.
2. Draw a base-ten diagram to represent the same total value with the fewest number of each unit.
3. What is the value of Mai's blocks?

Diego's Blocks

Launch

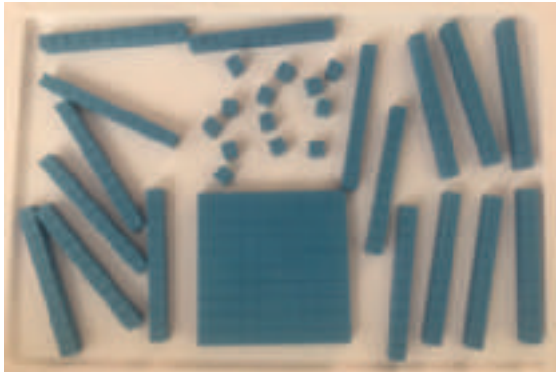
- Groups of 2
- Give students access to base-ten blocks.

Activity

- "Mai and Diego each used base-ten blocks to represent numbers."
- "Record the number of hundreds, tens, and ones each student used."
- "Find a way to represent the same value with the fewest number of each unit possible and represent it using a base-ten diagram."
- "Use blocks if it helps."
- "Together with your partner, figure out the total value of the blocks."
- 8 minutes: partner work time
- Monitor for students who write the total as a three-digit number.

Synthesis

- "How many did Diego have in all? Explain how you knew."



4. Diego has ____ hundreds ____ tens ____ ones.
5. Draw a base-ten diagram to represent the same total value with the fewest number of each unit.
6. What is the value of Diego's blocks?

Student Responses

1. Mai has 1 hundred, 7 tens, and 18 ones.
 2. Students draw 1 hundred, 8 tens, and 8 ones.
 3. Sample responses:
 - 188
 - 1 hundred 8 tens 8 ones
 - $100 + 88$
 4. Diego has 1 hundred, 17 tens, and 13 ones.
 5. Students draw 2 hundreds, 8 tens, and 3 ones.
 6. Sample responses:
 - 283
 - 2 hundreds 8 tens 3 ones
 - $200 + 80 + 3$
- Select previously identified students to share.
 - Write 283 while saying "2 hundreds, 8 tens, and 3 ones."
 - "This is a three-digit number. The digits represent amounts of hundreds, tens, and ones."
 - As needed, demonstrate reading the number left to right and gesture to emphasize the value of each digit.

Lesson Synthesis

🕒 10 min

"Today you represented numbers that were greater than 100 using base-ten blocks, base-ten

diagrams, numbers, and words.”

“You also saw how you can write a three-digit number to represent the amount of hundreds, tens, and ones.”

Display 324.

“How would you represent this number with base-ten blocks or a base-ten diagram? Explain how you know.” (I’d draw 3 hundreds, 2 tens, and 4 ones. The first digit shows how many hundreds, the second digit shows how many tens, and the last digit shows how many ones.)

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Supporting)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

Complete Cool-Down

Response to Student Thinking

Students represent 322 with more than 10 tens or ones in their drawings.

Next Day Support

- During the launch of the next lesson, have students practice representing numbers using different combinations of blocks and discuss how they know they have used the fewest number of blocks.

Lesson 4: Write Three-digit Numbers

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

Teacher-facing Learning Goals

- Read, write, and represent three-digit numbers using base-ten numerals.

Student-facing Learning Goals

- Let's represent three-digit numbers using base-ten numerals.

Lesson Purpose

The purpose of this lesson is for students to use their understanding of place value to identify and write three-digit numbers.

In previous lessons, students learned that the three digits in a three-digit number represent amounts of hundreds, tens, and ones.

In this lesson, students build on this understanding to write three-digit numbers when the number or value of the hundreds, tens, and ones are shown in different orders. Throughout the lesson, students practice identifying and writing three-digit numbers using their understanding of place value.

Access for:

Students with Disabilities

- Engagement (Activity 1)

English Learners

- MLR8 (Activity 1)

Instructional Routines

How Many Do You See? (Warm-up)

Materials to Gather

- Base-ten blocks: Activity 1, Activity 2

Lesson Timeline

Warm-up	10 min
Activity 1	20 min

Teacher Reflection Question

Why is it important for students to be able to connect different representations of three-digit numbers? How does the work of today's lesson help students expand their understanding of

Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

place value to include a hundred as a unit?

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

🕒 5 min

Order of Digits

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

Student-facing Task Statement

Find the numbers that make each equation true.

1. $638 = \underline{\hspace{2cm}}$ ones + $\underline{\hspace{2cm}}$ hundreds + $\underline{\hspace{2cm}}$ tens
2. $7 \text{ tens} + 2 \text{ ones} + 4 \text{ hundreds} = \underline{\hspace{2cm}}$

Student Responses

1. 8 ones + 6 hundreds + 3 tens
2. 472

----- Begin Lesson -----

Warm-up

🕒 10 min

How Many Do You See: Blocks

Standards Alignments

Addressing 2.NBT.A.1

The purpose of this How Many Do You See is for students to use the structure of base-ten blocks to determine the value of images (MP7). Students may name the quantity of the blocks they see by the

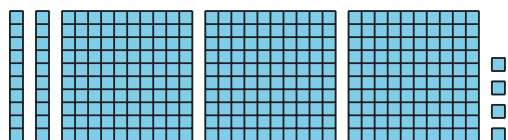
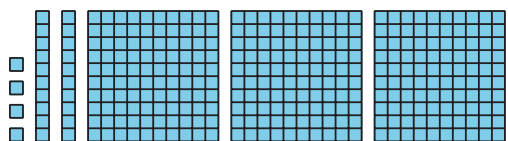
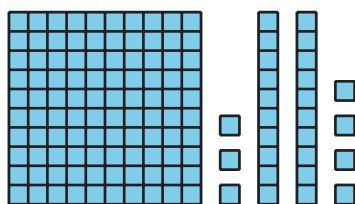
unit each block represents (3 hundreds, 2 tens, and 4 ones), use an addition expression to name the value of each group of blocks ($300 + 20 + 4$), or name the number that represents the value of the blocks (324).

Instructional Routines

How Many Do You See?

Student-facing Task Statement

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



Student Responses

Sample responses:

- 324: I saw the 3 hundreds then the 2 tens and the 4 ones and that makes 324.
- 324: it's the same blocks in a different order.
- 127: there's 1 hundred, 2 tens, and 7 ones.

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 as an expression using hundreds, tens, and ones.
- Repeat for each image.

Synthesis

- "What did you notice about the order of the blocks and the value the blocks represent?" (Even though the blocks were in different orders, the first two images had the same value. The order of the blocks doesn't change the value of the blocks.)
- "Today we are going to be reading and writing three-digit numbers. Pay attention to how the order, or place, of each digit shows the value."

Activity 1

🕒 20 min

Place Value Riddles

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

The purpose of this activity is for students to use their understanding of place value to determine the number described in a riddle. Students then write the number of hundreds, tens, and ones, and represent the value as a three-digit number.

🌐 Access for English Learners

MLR8 Discussion Supports. Display sentence frames to support partner discussion about each number written on the table: "I agree because . . ." or "I disagree because . . ."

Advances: Conversing

♿ Access for Students with Disabilities

Engagement: Provide Access by Recruiting Interest. Provide choice. Invite students to decide the order in which they complete the work. They can start with any of the riddles, as long as they complete all of them.

Supports accessibility for: Attention, Social-Emotional Functioning

Materials to Gather

Base-ten blocks

Student-facing Task Statement

Solve each riddle and write the three-digit number. Use the table to help you organize the digits.

riddle	hundreds	tens	ones	three-digit number
1				
2				
3				
4				
5				

Launch

- Groups of 2
- Give students access to base-ten blocks.
- "I have 4 hundreds, 3 ones, and 2 tens."
- "Which of these shows the total value written as a three-digit number? Explain how you know."
- Display 432, 234, 423.
- 30 seconds: quiet think time

riddle	hundreds	tens	ones	three-digit number
6				

1. I have 2 ones, 7 tens, and 6 hundreds.
2. I have 3 ones, 5 tens, and 2 hundreds.
3. I have 7 hundreds, 5 ones, and 3 tens.
4. I have 5 hundreds, no tens, and 9 ones.
5. I have 4 ones, 6 tens, and 3 hundreds.
6. I have 8 tens, 1 hundred, and no ones.

Student Responses

1. 672
2. 253
3. 735
4. 509
5. 364
6. 180

- 1 minute: partner discussion
- Share responses.

Activity

- “You are going to solve number riddles using base-ten blocks.”
- As needed, demonstrate the task with a student.
- “Take turns reading the clues, while your partner uses blocks to make the number.”
- “Make sure you agree before adding each number to the table.”
- 10 minutes: partner work time
- If students finish early, ask them to write their own riddles and trade them with other groups to solve.
- Monitor for students who recognize they need a zero when writing the three-digit number in places where there were no tens or no ones.

Synthesis

- Invite previously selected students to share what they noticed when writing 509 and 180.
- As needed, write 81, 801, and 810 and ask, “What is the difference between 81, 801, and 810?”

Activity 2

🕒 15 min

Mixed-up Digits

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

The purpose of this activity is for students to find the numbers that make equations true using what they know about the meaning of the digits in three-digit numbers. In each equation, the value of the digits are presented out of place value order. Throughout the activity, encourage students to explain how they know they have made true equations using precise language about the meaning of each digit in a 3-digit number (MP3, MP6).

Materials to Gather

Base-ten blocks

Student-facing Task Statement

Find the number that makes each equation true. Use base-ten blocks or diagrams if they help.

1. 4 hundreds + 6 tens + 2 ones = _____
2. 7 ones + 2 hundreds + 6 tens = _____
3. 3 tens + 5 hundreds = _____
4. $325 = \text{_____ hundreds} + \text{_____ ones} + \text{_____ tens}$
5. $70 + 300 + 2 = \text{_____}$
6. $836 = 6 + 800 + \text{_____}$
7. Clare and Elena worked to find the number that makes the equation true:

$7 \text{ ones} + 3 \text{ hundreds} = \text{_____}$.

They wrote different answers.

- Clare wrote $7 \text{ ones} + 3 \text{ hundreds} = 37$.
- Elena wrote $7 \text{ ones} + 3 \text{ hundreds} = 307$.

Who do you agree with? Explain.

Student Responses

1. 462
2. 267
3. 530
4. 3 hundreds + 5 ones + 2 tens

Launch

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

Activity

- "Find the number that makes each equation true."
- 6 minutes: partner work time
- Monitor for students who agree with Elena because:
 - 37 would mean 3 tens and 7 ones
 - if there are 3 hundreds, you need 3 digits

Synthesis

- Share and record responses for each equation.
- Consider asking:
 - "How do you know your equation is true?"
 - "How is each side of the equation the same? How is it different?"
- Invite previously identified students to share whether they agree with Clare or Elena and why.

5. 372
6. 30
7. Sample response: I agree with Elena because if there are 3 hundreds, you need three digits in the number. You have to show there are no tens.

Lesson Synthesis

🕒 10 min

"Today we learned that when you represent numbers with base-ten blocks, diagrams, or expressions, the order of the hundreds, tens, and ones may not matter. These representations use the size of the blocks, different shapes, labels, words, and numbers to make it clear what units and values they show. We learned that when you represent numbers with digits in a three-digit number, the order of the digits is very important. The order, or place, of each digit shows others the amount of hundreds, tens, and ones."

"Han says $5 \text{ tens} + 4 \text{ ones} + 7 \text{ hundreds} = 547$. What would you say to Han about his thinking?" (The number should be 754 because the 7 belongs in the hundreds place. You have to make sure each digit in the three-digit number matches the value, you can't just put them in the same order.)

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Supporting)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

----- Complete Cool-Down -----

Response to Student Thinking

Students write numbers in the blanks that match the order of the digits on the other side of the equation, but do not create true equations.

Next Day Support

- Launch Activity 1 with a discussion about this cool-down.

Lesson 5: Expanded Form of Numbers

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3
Building Towards 2.NBT.A.4

Teacher-facing Learning Goals

- Read, write, and represent three-digit numbers using base-ten numerals and expanded form.

Student-facing Learning Goals

- Let's represent three-digit numbers as a sum of the value of each digit.

Lesson Purpose

The purpose of this lesson is for students to use expanded form and base-ten numerals to represent numbers within 1,000.

In previous lessons, students represented three-digit numbers by recording how many of each unit (for example, 357 as 3 hundreds, 5 tens, 7 ones). They also connected representations of a number using the fewest number of base-ten blocks to the value of the digits in three-digit numbers.

In this lesson, students extend their understanding of ways to express the value of the digits in three-digit numbers to include **expanded form**. They represent three-digit numbers as the sum of the value of each digit (for example, $357 = 300 + 50 + 7$).

Access for:



Students with Disabilities

- Action and Expression (Activity 2)



English Learners

- MLR8 (Activity 1)

Instructional Routines

True or False (Warm-up)

Materials to Gather

- Base-ten blocks: Activity 1
- Number cubes: Activity 2

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

As students represented numbers in expanded form and as three-digit numbers, what evidence did you see that they understand place value?

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

⌚ 5 min

Three-digit Numbers in Expanded Form

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

Student-facing Task Statement

1. Represent the number 375 as the sum of hundreds, tens, and ones.

Expanded form: _____

2. Represent $200 + 40 + 7$ as a three-digit number.

Three-digit number: _____

Student Responses

1. $300 + 70 + 5$
2. 247

----- **Begin Lesson** -----**Warm-up**

⌚ 10 min

True or False: Value of Digits

Standards Alignments

Addressing 2.NBT.A.1

The purpose of this True or False is to elicit insights students have about the value of the digits in a three-digit number. The reasoning students express in the task helps students deepen their understanding that numbers can be represented in different ways. This will be helpful later when students represent numbers in multiple ways in the lesson activities.

In this activity, when students describe how they use the value of each digit to determine if the equation is true, they look for and make use of the base-ten structure when they look for the value of each digit in a 3-digit number (MP7).

Instructional Routines

True or False

Student-facing Task Statement

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

- $800 + 90 + 7 = 897$
- $156 = 50 + 100 + 6$
- $407 = 70 + 400$
- $632 = 22 + 10 + 600$

Student Responses

- True: 800 is the value of the 8 in 897, 90 is the value of the 9 and 7 is the value of the ones.
- True: they are out of order, but it is still 156.
- False: 407 is 400 and 7, not 70.
- True: $22 + 10 = 32$ and $32 + 600 = 632$

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 is different about the last equation?” (It’s not decomposed into hundreds, tens, and ones. 22 shows some tens and some ones and 10 shows another ten.)

Activity 1

🕒 20 min

Expressions and Three-digit Numbers

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

The purpose of this activity is for students to write three-digit numbers as the sum of the value of each digit, **expanded form**. Students connect the order and values of the addends in expanded form to the order and value of each place in a three-digit number. Use expanded form and its definition interchangeably throughout the activity so that students feel comfortable with the new vocabulary. When students represent numbers as sums by place value, they interpret the three-digit numbers in terms of its digits and the operation of addition (MP7).

Access for English Learners

MLR8 Discussion Supports. Provide all students with an opportunity to produce mathematical language by inviting students to chorally repeat “expanded form” in unison 1–2 times.

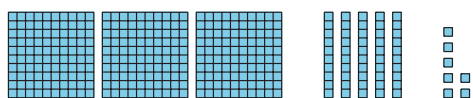
Advances: Speaking

Materials to Gather

Base-ten blocks

Student-facing Task Statement

- Andre has 3 hundreds. Tyler has 5 tens. Mai has 7 ones. They want to represent the amount they have using an equation.



Write an expression to represent the sum of their values.

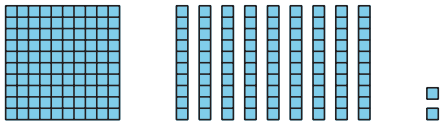
_____ + _____ + _____

Write the total value as a three-digit number:

Write each number as the sum of hundreds, tens, and ones, and as a three-digit number.

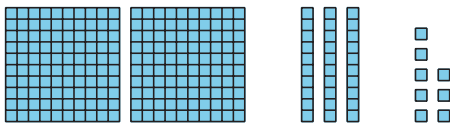
Launch

- Groups of 2
- Display Andre, Tyler, and Mai’s situation and the image of their blocks.
- “What would the expression look like?”
- 1 minute: independent work time
- 1 minutes: partner discussion
- Share responses.
- Display 357 and $300 + 50 + 7$.
- “We can represent the value of the blocks by writing a three-digit number.”
- “A number can also be represented as a sum of the value of each of its digits. This is called **expanded form**.”
- “Like a three-digit number, expanded form shows the sum starting with the place that has the greatest value on the left to the place with the least value on the right.”



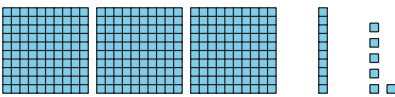
2. Expanded form: _____

Three-digit number: _____



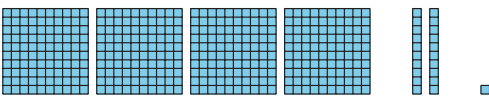
3. Expanded form: _____

Three-digit number: _____



4. Expanded form: _____

Three-digit number: _____



5. Expanded form: _____

Three-digit number: _____

Student Responses

1. $300 + 50 + 7$. 357
2. $100 + 90 + 2$. 192
3. $200 + 30 + 8$. 238
4. $300 + 10 + 6$. 316
5. $400 + 20 + 1$. 421

- As needed, discuss reasons why any expressions generated in the launch would or would not be examples of expanded form.

Activity

- “Now you will practice writing the value of the base-ten diagrams in expanded form and as a three-digit number.”
- 7 minutes: partner work time

Synthesis

- “What is the value of $40 + 100 + 3$? Explain how you know.” (143. I saw there was 1 hundred, 4 tens, and 3 ones. I just rearranged it in my head like expanded form.)
- “We know we can rearrange the addends to add in any order when we find the value of a sum. When a number is written in expanded form the values are written in place value order.”
- “How would we write 143 in expanded form?” ($100 + 40 + 3$)

Activity 2

🕒 15 min

Make It and Expand It

Standards Alignments

Addressing	2.NBT.A.1, 2.NBT.A.3
Building Towards	2.NBT.A.4

In this activity, students represent numbers using base-ten numerals and expanded form. Students work with a partner to arrange number cubes to create the largest or smallest three-digit number. This gives students the opportunity to reason together about place value. Students recognize that placing the number cubes in order from least to greatest creates the smallest number and ordering them from greatest to least will yield the largest possible number. This reasoning will be helpful in later lessons when students compare and order three-digit numbers.

Access for Students with Disabilities

Action and Expression: Internalize Executive Functions. Check for understanding by inviting students to explain why they chose to place the digits in the order they have. Draw attention to the greatest-to-least pattern.

Supports accessibility for: Memory, Organization

Materials to Gather

Number cubes

Required Preparation

- Each group of 2 needs 3 number cubes.

Student-facing Task Statement

- Roll the number cubes.

Make the largest number possible.

Write it as a three-digit number. _____

Write it in expanded form.

- Roll the number cubes.

Make the smallest number possible.

Write it as a three-digit number. _____

Write it in expanded form.

Launch

- Groups of 2
- Give each group 3 number cubes.
- "You and your partner will be making three-digit numbers."
- "Roll the number cubes. Use the digits you roll to make three-digit number that matches the directions for each problem."
- "Let's try 1 together."
- Roll three number cubes.
- "I rolled a ____, a ____, and a ____."
- "What is the smallest three-digit number I could make with these digits?"

3. Roll the number cubes.

Using the same digits, make a number different from your partner's.

Write it in expanded form.

Write it as a three-digit number. _____



Student Responses

- Answers vary. Sample response: Student rolls 2, 4, and 1.
 - 421
 - $400 + 20 + 1$
- Answers vary. Sample response: Student rolls 2, 4, and 1.
 - 124
 - $100 + 20 + 4$
- Answers vary. Sample response: If students roll 3, 2, and 6. One student writes $300 + 20 + 6$ and 326. The other student writes $600 + 30 + 2$ and 632.

- 30 seconds: quiet think time
- Share responses
- "After you and your partner agree on how to arrange your digits, write the number as a three-digit number and in expanded form."
- Write the number as a three-digit number and in expanded form on the board.

Activity

- 7 minutes: partner work time
- As students work, consider asking:
 - "Do you notice a pattern in the digits when you made the smallest or largest number?"
- Monitor for students who recognize that in order to make the largest number possible they need to order the number cubes from greatest to least.

Synthesis

- Invite 2–3 previously selected students to share the largest numbers they made.
- "How did you know if you were making the largest number possible?" (The largest digit rolled needed to be the hundreds. The next largest digit needed to be in the tens.)
- As time permits, repeat with the smallest number.

Lesson Synthesis

🕒 10 min

"Today you represented numbers in expanded form and as three-digit numbers."

Display 426 and $400 + 20 + 6$.

"Explain how you know these represent the same value." (The digits in 426 represent 4 hundreds, 2 tens, and 6 ones. That is the same as $400 + 20 + 6$)

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Supporting)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

Complete Cool-Down

Response to Student Thinking

Students write numbers that do not match the numbers given in the problems.

Next Day Support

- During the launch of the next day's activity, have students use base-ten blocks or diagrams to represent the numbers in the cool-down.

Lesson 6: Represent Numbers in Different Ways

Standards Alignments

Addressing 2.NBT.A.3

Teacher-facing Learning Goals

- Read, write, and represent three-digit numbers, including number names.

Student-facing Learning Goals

- Let's represent numbers in different ways.

Lesson Purpose

The purpose of this lesson is for students to represent numbers using unit form, base-ten numerals, expanded form, and words.

In previous lessons, students learned different ways that can be used to represent numbers.

In this lesson, students are introduced to one more way to represent numbers, that is, using words. They gain more experience with numbers represented in all the different ways they have worked with so far. In the lesson synthesis, students reflect on which representation has been most helpful in developing an understanding of the hundreds, tens, and ones in three-digit numbers.

This lesson has a Student Section Summary.

Access for:

Students with Disabilities

- Engagement (Activity 2)

English Learners

- MLR7 (Activity 2)

Instructional Routines

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

Materials to Gather

- Base-ten blocks: Activity 1
- Chart paper: Activity 1
- Tools for creating a visual display: Activity 2

Required Preparation

Lesson Timeline

Warm-up	10 min
Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min
Cool-down	5 min

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 questions?

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

 5 min

Words and Other Ways

Standards Alignments

Addressing 2.NBT.A.3

Student-facing Task Statement

1. Represent 147 with words.
2. Represent 147 in one other way.

Student Responses

1. one hundred forty-seven
2. Sample responses:
 - $100 + 40 + 7$
 - 1 hundred, 4 tens, and 7 ones
 - base-ten diagram that shows 1 hundred, 4 tens, and 7 ones

----- Begin Lesson -----

Warm-up

🕒 10 min

Which One Doesn't Belong: Numbers in Different Ways

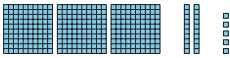
This warm-up prompts students to carefully analyze and compare four different representations of three-digit numbers. In making comparisons, students have a reason to use language precisely (MP6). The activity also enables the teacher to hear the terminologies students know and how they talk about place value and different representations of numbers.

Instructional Routines

Which One Doesn't Belong?

Student-facing Task Statement

Which one doesn't belong?

A three hundred twenty-five	B 
C 253	D 3 hundreds, 2 tens, 5 ones

Student Responses

- A is the only one that doesn't show the value of the individual units.
- B is the only one that doesn't show the values using words or numerals.
- C is the only one that doesn't represent 325.
- D is the only one that doesn't use just 1 representation. It has numbers and words together.

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 a partner."
- 2–3 minutes: partner discussion
- Share and record responses.

Synthesis

- "Which representations best help you understand the value of the number? Explain." (A has a lot of words to read, so I prefer C. D tells you how many of each. With B you just have to count the blocks.)
- "A shows us 325 represented using only words. You will have a chance to do this in the next activity."

Activity 1

🕒 15 min

Numbers as Words

Standards Alignments

Addressing 2.NBT.A.3

The purpose of this activity is for students to use words to represent three-digit numbers. Students are given numbers represented in different ways and asked to represent the same number in another way, including using words. Spelling numbers might present a challenge for some students. As students learn to spell and write numbers, encourage them to say the name aloud and then write it down. Also encourage them to use what they know about place value to say and write the name. Consider using an anchor chart or poster with words, including the words for numbers 0 to 20 and the multiples of ten, to provide support in this activity and later lessons.

Materials to Gather

Base-ten blocks, Chart paper

Required Preparation

- Prepare an anchor chart for the launch showing:
 - 253 represented with a base-ten diagram.
 - This number has ____ hundreds, ____ tens, and ____ ones.
 - The expanded form of this number is _____.
 - The three-digit number is _____.

Student-facing Task Statement

1. Fill in the blanks to represent 248 with words.
two _____ forty-_____
2. Fill in the blanks to represent 562 with words.
_____ hundred _____- _____
3. Represent this number with words.

Launch

- Groups of 2
- Display the anchor chart that shows the different forms of 253.
- Complete the chart together.
- "This number has ____ hundreds, ____ tens, and ____ ones." (2, 5, 3)
- "The expanded form of this number is _____."



4. Represent 627 with words.
5. Represent $900 + 50 + 1$ with words.
6. Represent three hundred eighteen in two different ways.

Student Responses

1. Two hundred forty-eight
2. Five hundred sixty-two
3. Four hundred thirty-three
4. Six hundred twenty-seven
5. Nine hundred fifty-one
6. Sample responses: 318, $300 + 10 + 8$.

- "The three-digit number is _____."
- "These other forms can help us think about writing a number using number names."
- "What is this number?" (two hundred fifty-three)
- Write the number name as the students say two hundred fifty-three.
- "Fifty-three has a hyphen because numbers with tens and ones representing 21 through 99 use a hyphen to show the 2 parts of a two-digit number."

Activity

- "For each question, work with your partner to figure out the names of each number. Think about when you will need to use a hyphen."
- 8 minutes: partner work time
- Monitor for the different ways students represent 318. Look for examples of:
 - base-ten diagrams
 - unit form
 - expanded form
 - three-digit number
 - number name

Synthesis

- Invite previously selected students to share their representations of 318.
- As needed, ask students how 318 could be represented in forms that you did not see them use during the activity.
- "Which representation makes the most sense to you?"
- "How can you use that representation to help you understand the others?"

Activity 2

⌚ 20 min

Represent the Numbers

Standards Alignments

Addressing 2.NBT.A.3

The purpose of this activity is for students to represent numbers in all the ways they have seen so far in this unit. Students are given a number in one form and they represent the same number in different ways. In the synthesis, students share which representations are most helpful. When students relate the different ways to represent a three-digit number (words, expanded form, diagrams, numerals) they deepen their understanding of the structure of the base-ten system (MP7).

Access for English Learners

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

Advances: Representing, Conversing

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, comment on the group's communication and how all members are actively engaged in creating the poster.

Supports accessibility for: Attention, Social-Emotional Functioning

Materials to Gather

Tools for creating a visual display

Required Preparation

- Create an anchor chart for the launch showing:
 - 253 represented with a base-ten diagram
 - This number has ____ hundreds, ____ tens, and ____ ones.
 - The expanded form of this number is _____.
 - The three-digit number is _____.

Student-facing Task Statement

Represent the number on your poster. Be sure to represent the number using:

- a three-digit number
- a base-ten diagram
- expanded form
- words

If you have time: Represent the number using only tens and ones. Represent the number composed in a different way.

Student Responses

Sample response:

three-digit number	only tens and ones
865	86 tens 5 ones

composed a different way	a base ten diagram
6 hundreds, 26 tens, 5 ones	Students draw 865

words	expanded form
eight hundred sixty-five	$800 + 60 + 5$

Launch

- Groups of 3–4
- Give each group tools for making a display.

Activity

- “Each group will be given a number. Work with your group to represent that number in different ways.”
- Display the chart from the first activity.
- “Think about how you might organize your representations and make sure that each group member does their fair share.”
- “Your group should represent the number as a three-digit number, with a base-ten diagram, using expanded form, and using words.”
- Give each group a three-digit number to represent.
- If time permits, groups can represent the number in the additional ways suggested.
- 12 minutes: small-group work time

Synthesis

- Display the chart paper from each group.
- “Now you will walk around and see other numbers and how they were represented in different ways.”
- “Think about which representations most clearly show you the value of the number.”
- “Then, check that all of the representations show the same number.”
- 5 minutes: gallery walk

Advancing Student Thinking

If students have representations that do not match the value of other representations on their poster, consider asking:

- “How do your representations show ____ (number given to group)?”

- “What is the same and different about all the different representations?”

Lesson Synthesis

🕒 10 min

“Today you had the chance to represent numbers in different ways and make connections across representations.”

“While you walked around, what representation did you look for first to help you identify the number? Why?” (I looked at the base-ten numeral first and compared it to the expanded form. Then I checked the others.)

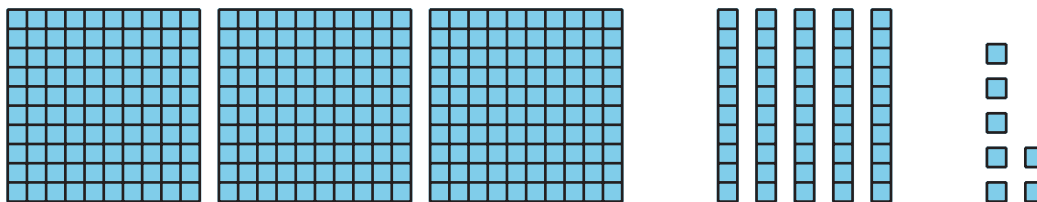
“What questions do you have about three-digit numbers or any of the representations you saw today?”

Suggested Centers

- Greatest of Them All (1–5), Stage 1: Two-digit Numbers (Addressing)
- Mystery Number (1–4), Stage 1: Two-digit Numbers (Supporting)

✍ Student Section Summary

In this section of the unit, we learned different ways to represent numbers that are greater than 99. We represented hundreds with base-ten blocks and diagrams. We represented numbers by describing the number of hundreds, tens, and ones that make up the number. We learned to read and write numbers as three-digit numbers, as a sum of the value of each of the digits, and using words.



3 hundreds 5 tens 7 ones

357

$300 + 50 + 7$

three hundred fifty-seven

Complete Cool-Down

Response to Student Thinking

Students write something other than one hundred forty-seven.

Next Day Support

- Before the warm-up, have students work in partners to discuss this cool-down and share different representations.

Lesson 7: Center Day 1 (Optional)

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A, 2.NBT.A.1.a, 2.NBT.B.5, 2.OA.B.2
 Building Towards 2.NBT.A.4

Teacher-facing Learning Goals

- Practice addition and subtraction within 100.
- Use place value to describe and identify a number.

Student-facing Learning Goals

- Let's use place value to identify numbers and practice adding and subtracting.

Lesson Purpose

The purpose of this lesson is for students to work with place value and practice addition and subtraction within 100.

This lesson is optional because it is an opportunity for extra practice that not all classes may need. In Activity 1, students learn stage 2 of the Mystery Number center, which was first introduced in grade 1. In this new stage, called Three-digit Numbers, they use clues based on place value to identify the number being described. In Activity 2, students choose to continue working on Mystery Number, or choose between two previously introduced centers focused on addition and subtraction.

Instructional Routines

True or False (Warm-up)

Materials to Gather

- Materials from previous centers: Activity 2
- Number cards 0–10: Activity 1

Materials to Copy

- Mystery Number Stage 2 Directions (groups of 2): Activity 1

Lesson Timeline

Warm-up	10 min
Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min

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?

----- Begin Lesson -----

Warm-up

⌚ 10 min

True or False: Compare to 100

Standards Alignments

Addressing	2.NBT.A.1.a, 2.NBT.B.5
Building Towards	2.NBT.A.4

The purpose of this True or False is to elicit strategies and understanding students have for comparing numbers and expressions to 100. Students have opportunities to share what they understand about 100 based on place value and by reasoning about the position of 100 on the number line. These ideas will also be helpful in future lessons when students place numbers within 1,000 on the number line and compare three-digit numbers based on place value.

Instructional Routines

True or False

Student-facing Task Statement

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

- $100 > 99$
- $100 < 99 + 1$
- $98 + 3 > 100$
- $50 + 50 + 50 > 100$

Student Responses

- True: when you count, 100 comes after 99, 100 has 3 digits, 100 is 10 tens and 99 is 9 tens and 9 ones.
- False: 100 comes after 99, so one more than 99 is 100.
- True: 98 is 2 away from 100, so if you add 3 it

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

- "How did you know that $100 < 99 + 1$ was false?" (99 plus 1 more is 100. When we count, 100 is the next number. They are equal.)

has to be more than 100.

- True: I know $50 + 50 = 100$, so it has to be more with another 50.

Activity 1

🕒 15 min

Introduce Mystery Number, Three-digit Numbers

Standards Alignments

Addressing 2.NBT.A

The purpose of this activity is for students to learn stage 2 of the Mystery Number center. Students pick 3 cards and make a mystery three-digit number. Students give clues based on the sentence starters and their partner tries to guess their number. Students should remove cards that show 10 from their deck. When they give clues and guess the number, students demonstrate understanding of the base-ten system, both the meaning of each digit in a number and the order of the numbers (MP7).

Materials to Gather

Number cards 0–10

Materials to Copy

Mystery Number Stage 2 Directions (groups of 2)

Launch

- Groups of 2
- Give each group a set of number cards and directions.
- “We are going to learn a new center called Mystery Number that you might have played in first grade. You will pick 3 cards and make a mystery three-digit number. Then you will give your partner clues and they will try to guess your mystery number.”
- “Read the directions with your partner to see if you have any questions.”
- Answer any questions or play a round against

the class to demonstrate the center.

Activity

- 15 minutes: partner work time
- Monitor for clues to share during the synthesis.

Synthesis

- “What types of clues were particularly helpful to you when you were trying to guess your partner’s number?”

Activity 2

🕒 20 min

Centers: Choice Time

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A, 2.NBT.B.5, 2.OA.B.2

The purpose of this activity is for students to choose from activities that focus on addition or subtraction. Students choose from any stage of previously introduced centers.

- Jump the Line
- Mystery Number
- Number Puzzles

Materials to Gather

Materials from previous centers

Required Preparation

Gather materials from:

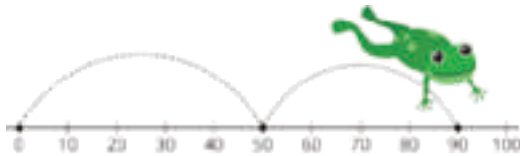
- Jump the Line, Stage 1
- Mystery Number, Stage 2

- Number Puzzles, Stages 2–4

Student-facing Task Statement

Choose a center.

Jump the Line



Mystery Number



Number Puzzles

$$14 = 8 + \square$$

Launch

- “Now you will choose from centers we have already learned. One of the choices is to continue with Mystery Number.”
- Display the center choices in the student book.
- “Think about what you would like to do first.”
- 30 seconds: quiet think time

Activity

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

Synthesis

- “What did you like about the activities you worked on today?”

Lesson Synthesis

🕒 10 min

“Today we described and guessed mystery numbers and practiced adding and subtracting. Tell your partner what you needed to remember about place value when you played today’s centers.” (You have to know the 3 digits represent hundreds, tens and ones. You have to know that 4 tens really means 40, not 4.)

Section B: Compare and Order Numbers within 1,000

Lesson 8: Three-digit Numbers on the Number Line

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.1, 2.NBT.A.2

Teacher-facing Learning Goals

- Represent whole numbers up to 1,000 as lengths from 0 on a number line.
- Use skip-counting by tens and hundreds to locate whole numbers up to 1,000 on a number line.

Student-facing Learning Goals

- Let's locate and represent three-digit numbers on the number line.



Lesson Purpose

The purpose of this lesson is for students to locate and label three-digit numbers on number lines.

In previous lessons, students learned different ways to represent three-digit numbers. They also located numbers within 100 on a number line.

In this lesson, students revisit the structure of the number line and use what they know about place value and counting by 10 and 100 to locate three-digit numbers on a number line (MP7). Throughout the lesson, students work with number lines that show 10 length units. The only labeled tick marks are the starting and ending numbers. Students locate and label numbers on these number lines by reasoning about the size of each length unit using what they know about counting within 1,000 and place value. They are encouraged to connect the structure of the number line to a representation of 10 ones, 10 tens, or 10 hundreds. This understanding will be important when students compare three-digit numbers in upcoming lessons.

Access for:

Students with Disabilities

- Representation (Activity 2)

English Learners

- MLR8 (Activity 1)

Instructional Routines

Choral Count (Warm-up)

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

In an earlier unit, students learned to locate and represent numbers as lengths from 0 on the number line. How did students draw on their earlier experiences with number lines, counting, and place value to reason about how to locate and label three-digit numbers on the number line? What ideas or connections might need to be made more explicit to help all students deepen their understanding of three-digit numbers?

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

🕒 5 min

Large Numbers on the Number Line

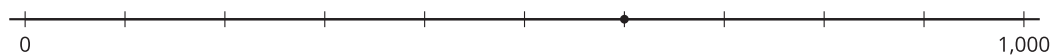
Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.2

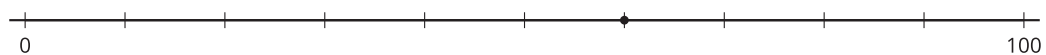
Student-facing Task Statement

- Label the point with a number it represents.

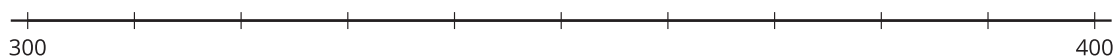
a.



b.

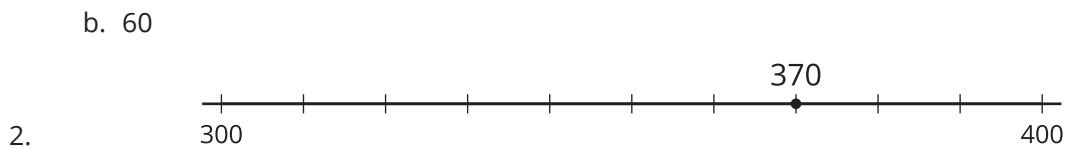


- Locate and label 370 on the number line.



Student Responses

- a. 600



Begin Lesson

Warm-up

🕒 10 min

Choral Count: Count by 10 and 100

Standards Alignments

Addressing 2.NBT.A.2

The purpose of this Choral Count is for students to practice counting by 10 and 100 and notice patterns in the count. This is the first time students are introduced to the number 1,000. Although students in grade 2 do not need to understand the unit of a thousand, students will work with 1,000 on a number line in this lesson to deepen their understanding of the structure of the base-ten system.

Instructional Routines

Choral Count

Student Responses

- Record the first count in a column. Record the second count next to the first so that numbers that begin with the same digit are in the same row.

Sample responses:

- In the first column it's like counting from 0 to 10 in the tens place. In the second column, it's like counting from 0 to 10 in the hundreds place.
- There's 1 zero in each number until you get to

Launch

- "Count by 10, starting at 0."
- Record in a column as students count.
- Stop counting and recording at 100.
- "Count by 100, starting at 0."
- Record the count in a new column next to the first.
- Stop counting and recording at 1,000.

Activity

- "What patterns do you see?"

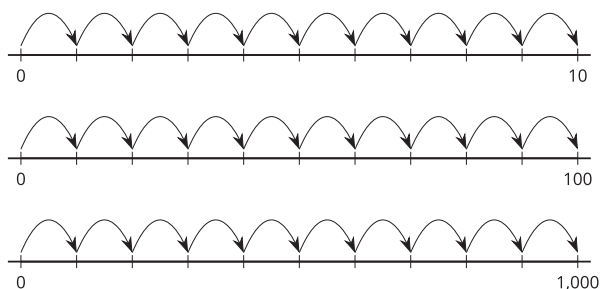
100 in the first column.

- There's 1 zero, then 2 zeroes until you get to 1,000 in the second column.
- The numbers beside each other start with the same digit.
- There's 10 total numbers in each column.

- 1–2 minutes: quiet think time
- Record responses.

Synthesis

- Draw three number lines that show counting by 1, 10, and 100, such as:



- “What patterns do you see?” (All 3 number lines show 10 jumps. They all start at zero, but end with different numbers.)

Activity 1

🕒 20 min

Label Three-digit Numbers

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.1, 2.NBT.A.2

The purpose of this activity is for students to connect their understanding of the counting sequence within 1,000 and their understanding of place value to the structure of the number line. In the launch, students make sense of 3 number lines that have different unit intervals. They may reason about the numbers each tick mark represents by counting by 1, 10, or 100. Other students may notice that there are 10 lengths (unit intervals) and relate this to decomposing a ten or hundred to describe the numbers represented by each tick mark. Throughout the activity, encourage students to make connections between the reasoning they use based on counting and their understanding of place value as they write three-digit numbers and make sense of the structure of the number line (MP7).

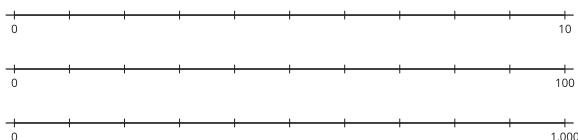
Access for English Learners

MLR8 Discussion Supports. Invite students to begin partner interactions by repeating the questions “How will you count?” and “How do you know?” This gives both students an opportunity to produce language.

Advances: Conversing

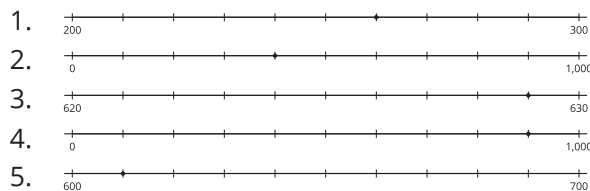
Student-facing Task Statement

What do you notice? What do you wonder?



Locate and label 30, 300, and 3 on a number line.

Label each point with a number it represents.



Student Responses

1. 260
2. 400
3. 629
4. 900
5. 610

Launch

- Groups of 2
- Display the images of the 3 number lines.
- “What do you notice? What do you wonder?”
- 30 seconds: quiet think time
- Share and record responses.
- “What is the same or different about these number lines?” (They all have 10 sections between the start and end marks. They are the same length, but the tick marks represent different numbers. They all start with zero.)
- 30 seconds: quiet think time
- Share responses.
- “Take a few minutes to locate and label 30, 300, and 3 on a number line.”
- 3 minutes: independent work time

Activity

- “Now you are going to look at some more number lines with a partner and identify the numbers represented by the points.”
- “For each number line, discuss with your partner and decide if you can count the tick marks by 1, 10, or 100. Then label each point with a number it represents.”
- 8 minutes: partner work time
- Monitor for students who recognized they needed to count by 1 for the number line

showing 620–630.

Synthesis

- Display the image for the number line showing 620–630.
- Invite previously identified students to share how they identified 629.
- Consider asking:
 - “How can you prove that the point represents 629?”
 - “What numbers do the tick marks represent on this number line? How did you count the tick marks?”
- As time permits, invite students to share how they identified other points.

Advancing Student Thinking

If students label number lines with numbers that do not correspond to the count pattern, consider asking:

- “How did you decide how to label the point?”
- “What numbers do the tick marks on this number line represent?”
- “Looking at the starting and ending numbers, what skip-counting pattern could you use to count the tick marks?”

Activity 2

🕒 15 min

Represent Three-digit Numbers on a Number Line

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.1, 2.NBT.A.2

The purpose of this activity is for students to use their place value understanding to locate

numbers on a number line. Number lines are given with a starting number, 10 length units marked with tick marks, and an ending number. None of the tick marks are labeled. Students determine the size of the units based on the range of the number line. For example, if the starting and ending numbers are 0 and 100, they may reason that the unit represented by the tick marks is ten because there are 10 tens in a hundred. Once students have determined the unit marked on the number line, they are able to count to find the location of each number. Students may begin to notice that when the two ticks at the right and left of the number line are 100 apart, the individual tick marks go up by 10 and when the two tick marks at the right and left of the number line are 10 apart, the individual tick marks go up by 1 (MP8).

Access for Students with Disabilities

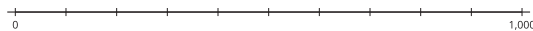
Representation: Internalize Comprehension. Invite students to label tick marks on the number line, or identify the value of the middle tick mark for a frame of reference to solve the problem. Discuss how identifying and labeling other parts of the number line help you get closer and closer to the point you are trying to find.

Supports accessibility for: Organization, Memory, Attention

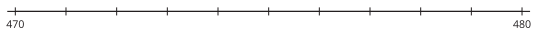
Student-facing Task Statement

Locate and label each number on the number line. Label the tick marks with the numbers they represent if it helps.

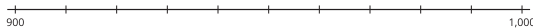
1. 700



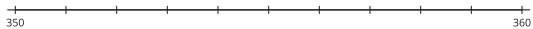
2. 472



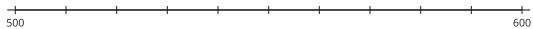
3. 940



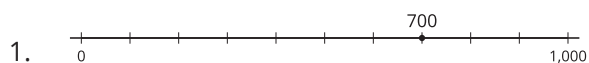
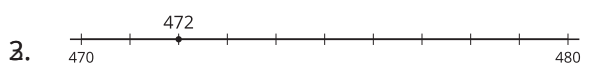
4. 356



5. 590



Student Responses

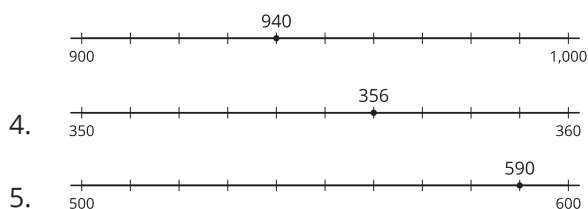


Launch

- Groups of 2

Activity

- "Now you are going to locate and label three-digit numbers on the number line."
- "Take a few minutes to try them on your own and be ready to explain to your partner."
- 5 minutes: independent work time
- "Now compare with a partner and share your thinking."
- If students are not finished, they can work together.
- 5 minutes: partner discussion
- Monitor for different ways students determine the unit represented on the number line for representing 940 such as:
 - counting by ones, tens, and hundreds to see which one gets



them to the ending number

- using the starting and ending numbers to determine what the unit must be

Synthesis

- Display the number line showing 900–1,000.
- Invite a student to demonstrate their strategy of trial and error to determine how to label the tick marks.
- Invite another student to demonstrate their strategy of reasoning about the starting and ending numbers. (I know the difference between 900 and 1,000 is 100 and there are 10 length units. Each one must be 10 because there are 10 tens in a hundred.)
- “What is the same and different about how they decided the unit on this number line?” (They both counted to see how many tick marks were there. ____ tried counting by 1 and then 10, but ____ counted by 10 right away.)

Lesson Synthesis

🕒 10 min

“Today you represented three-digit numbers on number lines.”

Display the images of the number lines from the launch.

“If I wanted to locate and represent 80 on a number line, which one should I choose? Explain.” (You should choose the one that shows 0–100 because if you count by 10 you will find 80. It won’t be on the 0–10 one and it would be hard to find on the 1,000 one even though it could go in between 0 and the first mark.)

Suggested Centers

- Mystery Number (1–4), Stage 2: Three-digit Numbers (Addressing)

- Greatest of Them All (1–5), Stage 2: Three-digit Numbers (Addressing)
- Get Your Numbers in Order (1–5), Stage 1: Two-digit Numbers (Supporting)

Complete Cool-Down

Response to Student Thinking

Students label the points with a number other than 600 and 60.

This work of this lesson builds on number line concepts developed in a prior unit.

Next Day Support

- Before the warm-up, have students practice skip counting by 10 and 100 and discuss the cool down with a partner.

Prior Unit Support

Grade 2, Unit 4, Section A: The Structure of the Number Line

Lesson 9: Compare Numbers on the Number Line

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.1, 2.NBT.A.4

Building Towards 2.NBT.A.4

Teacher-facing Learning Goals

- Compare three-digit numbers using the relative position of numbers on a number line.

Student-facing Learning Goals

- Let's compare numbers on the number line.

Lesson Purpose

The purpose of this lesson is for students to compare three-digit numbers using a number line.

In previous lessons, students estimated the location of numbers on the number line within 100 and learned to locate numbers within 1,000 on the number line. In this lesson, students use the relative position of numbers on the number line to compare three-digit numbers. Students estimate the location of numbers on the number line and consider how the linear representation can help them compare numbers and explain their reasoning (MP3). Throughout the lesson, listen for the ways students make connections to place value as they estimate the location of numbers and compare numbers using the number line.

Access for:

Students with Disabilities

- Representation (Activity 2)

English Learners

- MLR8 (Activity 1)

Instructional Routines

Estimation Exploration (Warm-up)

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min

Teacher Reflection Question

Unlike talking, listening is a difficult thing to observe. At what points in the lesson did you observe students listening to one another's ideas today in class? What indicators do you have that they were listening?

Lesson Synthesis	10 min
Cool-down	5 min

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

⌚ 5 min

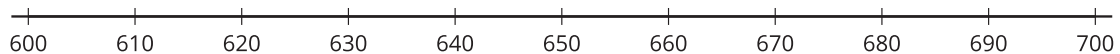
Compare Numbers on the Number Line

Standards Alignments

Addressing	2.MD.B.6
Building Towards	2.NBT.A.4

Student-facing Task Statement

1. Estimate the location and label 681 and 618 on the number line.



2. Use $<$, $>$, or $=$ to compare 681 and 618.

3. Use the number line to explain how you know your comparison is true.

Student Responses

1. Students represent 618 and 681 on the number line with a point in reasonable locations.
2. $618 < 681$ or $681 > 618$
3. I know that 681 is greater than 618 because 681 is closer to 700 and 618 is very close to 600.

Begin Lesson

Warm-up

⌚ 10 min

Estimation Exploration: Hundreds

Standards Alignments

Addressing 2.MD.B.6

The purpose of this Estimation Exploration is for students to practice the skill of making a reasonable estimate for a point on a number line based on the location of other numbers represented. Students give a range of reasonable answers when given incomplete information. They have the opportunity to revise their thinking as additional information is provided. Revealing the actual answer is not necessary because leaving it open ended provides an opportunity to focus on reasonableness and not just one right answer.

Instructional Routines

Estimation Exploration

Student-facing Task Statement

What number could this be?



1. Record an estimate that is:

too low	about right	too high

2. Record an estimate that is:

too low	about right	too high

Student Responses

1. Sample responses:

- too low: 350–380
- about right: 381–395
- too high: 395–399

2. Sample responses:

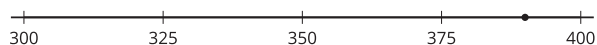
- too low: 376–384
- about right: 385–390
- too high: 391–399

Launch

- Group of 2
- Display the image.
- “What number could be represented by the point on the number line?”
- “What is an estimate that’s too high? Too low? About right?”
- 1 minute: quiet think time

Activity

- “Discuss your thinking with your partner.”
- 1 minute: partner discussion
- Record responses.
- “We had a lot of different guesses, because we don’t have a lot of information.”
- Add 3 tick marks to the number line, so that it looks like this:



- “Based on this new information, do you want to revise or change your estimates?”
- 1 minute: quiet think time
- 1 minute: partner discussion
- Record responses.

- “How did your estimation change?”
- 30 seconds: quiet think time
- Share responses.

Synthesis

- “How did the tick marks help you revise your estimate?”

Activity 1

🕒 20 min

Compare Comparisons

👤 ↔ 👤 PLC Activity

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.1, 2.NBT.A.4

The purpose of this activity is for students to make sense of different methods they can use to compare three-digit numbers. They analyze the thinking of others and make connections across representations (MP2, MP3). Although students have compared numbers using different representations in prior units, this activity offers them the opportunity to consider using the number line as a tool to compare three-digit numbers. In the synthesis, students will discuss which representation makes it easier to see the comparison. While students could make a case that each of the representations was easier for them, the focus is on Jada’s way, the number line.

🌐 Access for English Learners

MLR8 Discussion Supports. Display sentence frames to support partner discussion. “____ and ____ are the same/alike because . . .” and “____ and ____ are different because . . .”

Advances: Speaking, Conversing

Student-facing Task Statement

Each student compared 371 and 317, but represented their thinking in different ways.

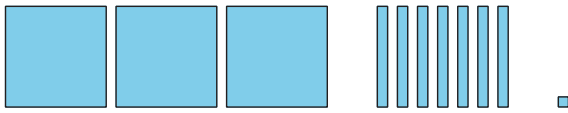
Diego

Launch

- Groups of 2

Activity

- “Diego, Jada, and Clare were asked to compare 371 and 317. They each

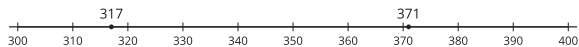


- I see 3 hundreds for each number.
- 317 only has 1 ten, but 371 has 7 tens.
- $371 > 317$

Clare

- Each has 3 hundreds.
- 371 has 7 tens, but 317 only has 1 ten.
- $317 < 371$

Jada



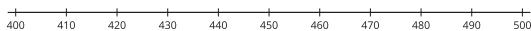
- I can see that 371 is farther to the right on my number line, so I know it is greater than 317.
- $371 > 317$

1. What is the same and different about these students' representations?

Discuss with a partner.

2. Try Jada's way.

Estimate the location of 483 and 443 on the number line. Mark each number with a point. Label the point with the number it represents.



3. Use $>$, $=$, or $<$ to compare 483 and 443.

Student Responses

1. Sample response: Clare and Diego both

represented their thinking differently."

- "Take some time to look over their methods."
- 2 minutes: independent work time
- "Discuss with your partner how their methods are the same and different."
- 4 minutes: partner discussion
- "Now try Jada's way."
- 6 minutes: partner work time

Synthesis

- "Clare, Diego, and Jada represented their thinking in different ways. Whose method made it easier to see that 371 is greater than 317? Explain." (Jada's because you just have to look at which number is farther to the right. You can see 371 is farther from 0. Diego's because I use diagrams and I can see quickly that the hundreds are the same and there are more tens, but some things were the same.)
- As needed, "Jada and Diego wrote $371 > 317$, but Clare wrote $317 < 371$. Who do you agree with? Explain." (They both mean the same thing. 371 is greater than 317, so 317 is less than 371.)

looked at the hundreds and then the tens and decided 371 was greater. Diego and Jada wrote the same expression. Jada looked at which number was farther to the right instead of looking at hundreds and tens.

2. Students represent 483 and 443 in reasonable locations on the number line with points.
3. $483 > 443$ or $443 < 483$

Advancing Student Thinking

If students write comparison statements that are not true, ask them to read their statements and consider asking:

- “How did you decide which number was greater?”
- “How does your statement match the number line?”

Activity 2

🕒 15 min

Compare in Different Ways

Standards Alignments

Addressing 2.MD.B.6, 2.NBT.A.1, 2.NBT.A.4

The purpose of this activity is for students to compare three-digit numbers based on different representations. Students continue to make connections and deepen their understanding of place value as they compare numbers using base-ten diagrams and number lines. They have the opportunity to reflect and share about the representation that makes the most sense to them and how they can use it to justify their thinking (MP3). This understanding will be helpful in upcoming lessons when students choose their own methods to compare three-digit numbers.

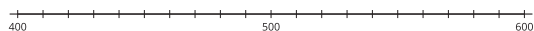
Access for Students with Disabilities

Representation: Develop Language and Symbols. Support understanding of the problem by inviting students to act it out. For example, recreate a number line using index cards and string. Have students hold a given number and find their appropriate spot on the number line.

Supports accessibility for: Memory, Conceptual Processing

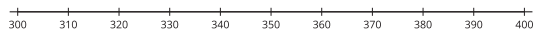
Student-facing Task Statement

1. Locate and label 420 and 590 on the number line.



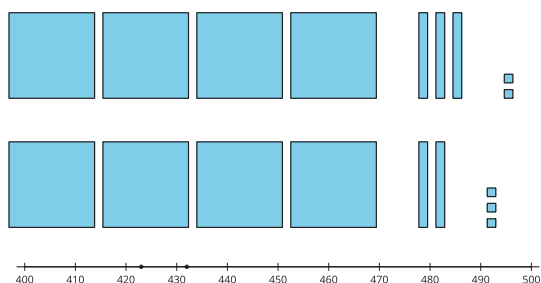
Use $<$, $>$, and $=$ to compare 420 and 590.

2. Estimate the location of 378 and 387 on the number line. Mark each number with a point. Label the point with the number it represents.



Use $<$, $>$, and $=$ to compare 378 and 387.

3. Diego and Jada compared 2 numbers. Use their work to figure out what numbers they compared. Then use $<$, $>$, and $=$ to compare the numbers.



4. Which representation was most helpful to compare the numbers? Why?

Launch

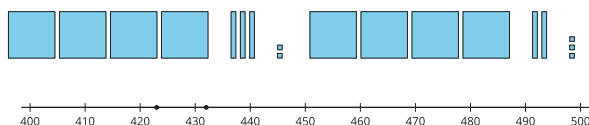
- Groups of 2

Activity

- “In the last activity, we saw that Jada found it helpful to use the number line to explain that 371 is greater than 317.”
- “In this activity, you will compare three-digit numbers and explain your thinking using the number line.”
- 6 minutes: independent work time
- “Compare your answers with a partner and use the number line to explain your reasoning.”
- 4 minutes: partner discussion

Synthesis

- Display the images for 432 and 423.



- “What is the same or different about seeing these numbers on the number line compared to looking at a base-ten diagram?” (The one farthest to the right is greater. With the diagram you have to count to see which one has more. The number with more hundreds or tens is farther to the right on the number line.)

Student Responses

1. A number line with points on 420 and 590.
 $420 < 590$ or $590 > 420$
2. A number line with points on reasonable locations for 378 and 387.
 $387 > 378$ or $378 < 387$
3. $432 > 423$ or $423 < 432$
4. Sample response: I liked using the number line because when I see the points, it's easy to know which number is greater because it is farther to the right.

Lesson Synthesis

⌚ 10 min

"Today we used a number line to compare three-digit numbers."

Display 543 and 345.

"If I wanted to compare 543 and 345, how would the number line help me see which is less and which is greater? Explain." (On a number line, 345 would be closer to zero and 543 is located farther to the right of 345. It would be easy to see that 345 is less than 543.)

Suggested Centers

- Mystery Number (1–4), Stage 2: Three-digit Numbers (Addressing)
- Get Your Numbers in Order (1–5), Stage 1: Two-digit Numbers (Supporting)
- Jump the Line (2–5), Stage 1: Add and Subtract within 100 (Supporting)

----- Complete Cool-Down -----

Response to Student Thinking

Students write comparison statements that are not true or do not finish sharing their reasoning in writing.

This work of this lesson builds on number line concepts developed in a prior unit.

Next Day Support

- Launch Activity 1 with a discussion about this cool-down.

Prior Unit Support

Grade 2, Unit 4, Section A: The Structure of the Number Line

Lesson 10: Place Value Comparisons (Part 1)

Standards Alignments

Addressing 2.NBT.A.4, 2.NBT.B.8

Teacher-facing Learning Goals

- Compare three-digit numbers by reasoning about the value of the digits.

Student-facing Learning Goals

- Let's use place value to compare three-digit numbers.

Lesson Purpose

The purpose of this lesson is for students to compare three-digit numbers using their understanding of place value.

In grade 1, students compared two-digit numbers using the $<$, $>$, and $=$ symbols. In previous lessons, students represented three-digit numbers in different ways and identified the place value of digits in three-digit numbers.

In this lesson, students transition from representing and comparing three-digit numbers based on the counting sequence and their location on the number line to focus on reasoning based on place value. They compare hundreds to hundreds, tens to tens, and ones to ones and learn that any number with a greater number of hundreds is larger than a number with fewer hundreds, regardless of the value of the tens and ones (MP7). For example, $202 > 199$ because there are 2 hundreds compared to 1 hundred. In this lesson, they compare quantities represented with base-ten diagrams to support students' reasoning based on place value.

Access for:

Students with Disabilities

- Engagement (Activity 1)

English Learners

- MLR8 (Activity 2)

Instructional Routines

Number Talk (Warm-up)

Lesson Timeline

Warm-up

10 min

Teacher Reflection Question

Identify who has been sharing their ideas in class lately. Make a note of students whose ideas have not been shared and look for an

Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min
Cool-down	5 min

opportunity for them to share their thinking in tomorrow's lesson.

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

🕒 5 min

Count and Compare

Standards Alignments

Addressing 2.NBT.A.4

Student-facing Task Statement

- Write the value of each base-ten diagram as a three-digit number. Use the symbols $>$, $=$, or $<$ to compare the numbers.



_____ _____

- Explain how you know.

Student Responses

- $227 > 226$
- 227 is greater than 226 because they have the same number of hundreds and tens, but 227 has 1 more one than 226.

----- Begin Lesson -----

Warm-up

 10 min

Number Talk: Add Tens

Standards Alignments

Addressing 2.NBT.B.8

The purpose of this Number Talk is to elicit strategies and understandings students have for mentally adding a multiple of 10 to a number. Building on their understanding of place value, students add tens to tens. When students notice that only the digit in the tens place is changing and make connections between the tens in each expression, they look for and make use of structure and express regularity in repeated reasoning (MP7, MP8). These understandings help students develop fluency and will be helpful in later lessons when students will add using strategies based on place value.

Instructional Routines

Number Talk

Student-facing Task Statement

Find the value of each expression mentally.

- $36 + 40$
- $46 + 30$
- $59 + 40$
- $69 + 30$

Student Responses

- 76: $30 + 40 = 70$ and $70 + 6 = 76$
- 76: 46, 56, 66, 76, I just counted on by 10.
- 99: $60 + 40 = 100$ and it is 1 less than that.
- 99: I used the last problem. 69 is 10 more than 59 and 30 is 10 less than 40, so I knew the answer would be the same.

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 the first expression help you find the value of the second one?" (46 is 10 more than 36, and 30 is 10 less than 40, so the answer is the same. They have the same number of tens.)

Activity 1

🕒 15 min

Compare by Place

Standards Alignments

Addressing 2.NBT.A.4

The purpose of this activity is for students to learn that when comparing three-digit numbers, it is helpful to start by comparing the value of the hundreds. In this activity, the base-ten diagrams are not organized by place and do not mirror the structure of a three-digit number. Students learn that when comparing numbers in which one number has more hundreds than the other, it is not necessary to consider the tens and ones.

🕒 Access for Students with Disabilities

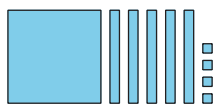
Engagement: Provide Access by Recruiting Interest. Invite students to share situations and examples of comparing numbers in their real lives. For example, cars in a parking lot, students in a grade level, and so on, to bring a context to the work in the lesson.

Supports accessibility for: Memory, Conceptual Processing

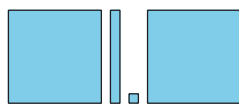
Student-facing Task Statement

Who has more? How do you know?

Mai



Tyler



Compare the base-ten diagrams.

Write each value as a three-digit number. Use the symbols $<$, $>$, or $=$ to compare the numbers.

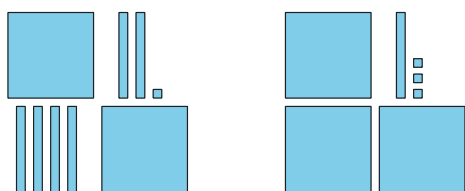
1.

Launch

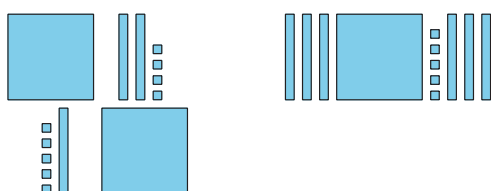
- Groups of 2
- Display the image.
- “Who has more? How do you know?” (Tyler has 2 hundreds, but Mai only has 1. He has more.)
- 30 seconds: quiet think time
- 1 minute: partner discussion
- Share and record responses.

Activity

- “Today you will compare quantities represented by base-ten diagrams.”
- “Compare the diagrams. Write the value of each quantity as a three-digit number and

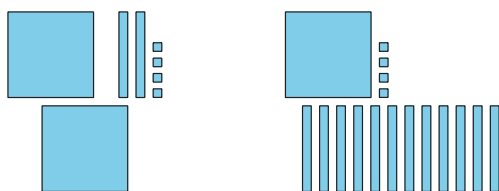


_____ _____



2.

_____ _____



3.

_____ _____



Student Responses

1. $261 < 313$
2. $239 > 165$
3. $224 = 224$

use the greater than, less than, or equal to symbols to compare the numbers."

- 8 minutes: independent work time
- "Compare with a partner."
- 2 minutes: partner discussion

Synthesis

- Share responses for the first two comparisons.
- Consider asking:
 - "How did you know your statement is true?"
 - "What unit was most important in deciding which quantity was greater?"
- Display the images for $224 = 224$.
- "Which value is greater? How do you know?" (The two quantities are equal. Both diagrams represent 224. One had 2 hundreds, but the other had 1 hundred and 12 tens.)
- Record $224 = 224$.
- "When comparing numbers based on base-ten diagrams, what do you think about to help you decide which quantity is greater? Explain." (First we need to find out how many hundreds each number has, but sometimes that means we have to count the tens to see if there are enough to make another hundred. If a number has more hundreds, we know that number is greater.)

Advancing Student Thinking

If students write something other than $224 = 224$ for the last problem, consider asking:

- "How did you decide how to write each value as a three-digit number? How did you compare the numbers?"

- “Are there any units that have 10 or more?”
- “How did composing a new unit change your answer?”

Activity 2

🕒 20 min

Compare Hundreds, Tens, and Ones

Standards Alignments

Addressing 2.NBT.A.4

The purpose of this activity is for students to extend their understanding of comparing three-digit numbers to include amounts in which the values in the hundreds place and tens place are the same in both numbers. In the last activity, students learned that by comparing the hundreds you can determine the greater value without considering the tens and ones. In this activity, they recognize the need to compare hundreds to hundreds, tens to tens, and ones to ones when the digits are the same in the numbers being compared.

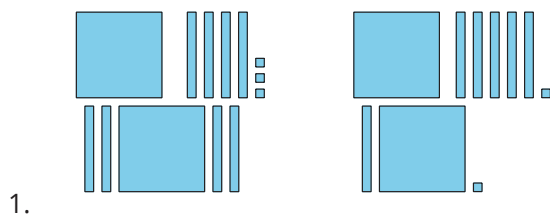
🌐 Access for English Learners

MLR8 Discussion Supports. If necessary, invite students to repeat their reasoning using mathematical language: “Can you say that again, using place value language?”

Advances: Speaking

Student-facing Task Statement

Compare the base-ten diagrams. Write each value as a three-digit number. Use the symbols $>$, $<$, or $=$ to compare the numbers.

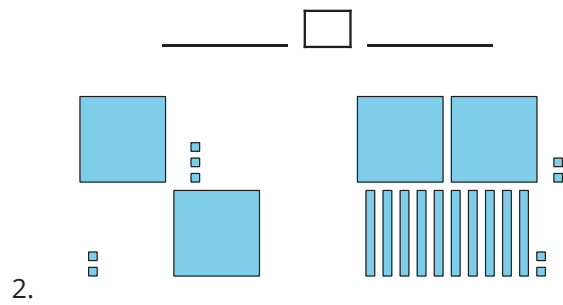
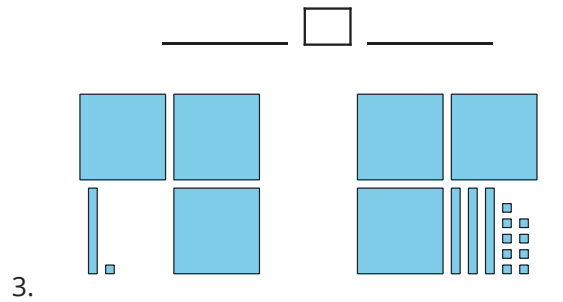
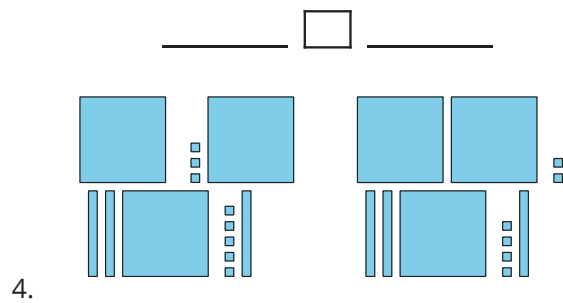


Launch

- Groups of 2

Activity

- “In the last activity we saw that if one number has more hundreds than another number it has the greater value.”
- “You will compare more quantities represented by base-ten diagrams.”
- “Compare the diagrams. Write the value of



5. In the last problem, how do you know which value was greater?

Student Responses

1. $283 > 262$
2. $205 < 304$
3. $311 < 339$
4. $338 > 336$
5. Sample response: They have the same number of hundreds and tens, but 338 has more ones.

each quantity as a three-digit number and use the greater than, less than, or equal to symbols to compare the numbers."

- "Work with your partner to compare numbers and discuss your thinking for each problem."
- 15 minutes: partner work time
- Monitor for students who use precise language to explain how they knew that $338 > 336$ based on comparing the value of each digit.

Synthesis

- Invite previously selected students to share how they compared 338 and 336.
- Display $445 \underline{\hspace{1cm}} 447$.
- "Based on what you learned, how can you tell which number is larger without using the blocks?" (I can look at a number and see how many hundreds, tens, and ones there are without the diagrams.)

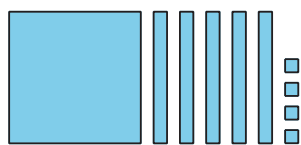
Lesson Synthesis

🕒 10 min

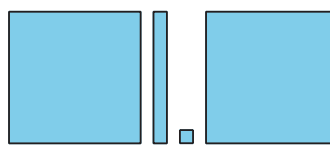
"Today, we compared three-digit numbers with the help of base-ten diagrams."

Display the image from the launch of the first activity.

Mai



Tyler



"Tyler believes it is always better to compare numbers by starting with the ones, then tens, and then hundreds. Mai thinks it is better to start with the hundreds."

"Who do you agree with? Explain your thinking to your partner." (I think it depends. If there are more hundreds it's easy to see who has more, but if the hundreds and the tens are the same we have to use the ones to decide who has more.)

Suggested Centers

- Mystery Number (1–4), Stage 2: Three-digit Numbers (Addressing)
- Get Your Numbers in Order (1–5), Stage 1: Two-digit Numbers (Supporting)
- Jump the Line (2–5), Stage 1: Add and Subtract within 100 (Supporting)

Complete Cool-Down

Response to Student Thinking

Students write something other than $227 > 226$.

The work of this lesson builds on work with comparing numbers from a prior unit.

Next Day Support

- Before the next day's warm-up, pass back the cool-down and work in small groups to make corrections.

Prior Unit Support

Grade 1, Unit 4, Section C: Compare Numbers to 99

Lesson 11: Place Value Comparisons (Part 2)

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3, 2.NBT.A.4

Teacher-facing Learning Goals

- Compare three-digit numbers using place value understanding.

Student-facing Learning Goals

- Let's compare three-digit numbers using place value.

Lesson Purpose

The purpose of this lesson is for students to compare three-digit numbers using their understanding of place value.

In previous lessons, students learned to compare three-digit numbers using the number line and base-ten diagrams. In this lesson, students compare three-digit numbers in tasks that do not suggest a particular representation. In the first activity, students complete comparison statements to make them true and are encouraged to explain or show their thinking in a way that makes sense to them. In the second activity, students learn a new stage of the Greatest of Them All center. This activity encourages students to reason about place value as they use digits to make three-digit numbers and compare numbers with their partner.

Access for:

Students with Disabilities

- Representation (Activity 1)

English Learners

- MLR8 (Activity 2)

Instructional Routines

True or False (Warm-up)

Materials to Gather

- Number cards 0–10: Activity 2

Materials to Copy

- Greatest of Them All Stage 2 Recording Sheet (groups of 1): Activity 2

Lesson Timeline

Warm-up

10 min

Teacher Reflection Question

Students shared their thinking multiple times in this lesson. How did students reason about or

Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min
Cool-down	5 min

explain their comparisons? What have you noticed about the language students use that show they understand how to compare three-digit numbers based on the meaning of their digits?

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

🕒 5 min

Place Value Comparisons

Standards Alignments

Addressing 2.NBT.A.4

Student-facing Task Statement

Place one of the numbers in each blank to make each comparison true. Use each number only once.

112

701

398

1. _____ > 671
2. 393 < _____
3. _____ < 127

Student Responses

1. 701 > 671
2. 393 < 398
3. 112 < 127

----- Begin Lesson -----

Warm-up

🕒 10 min

True or False: Greater Than or Less Than

Standards Alignments

Addressing 2.NBT.A.3, 2.NBT.A.4

The purpose of this True or False is to elicit strategies and understandings students have for working with the value of the digits in a three-digit number. These understandings help students consider place value when comparing three-digit numbers. This will be helpful later when students compare three-digit numbers without visual representations.

Instructional Routines

True or False

Student-facing Task Statement

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

- $86 > 80 + 4$
- $400 + 40 + 6 < 846$
- $330 < 300 + 3$
- $500 + 50 > 505$

Student Responses

- True: the left side has a value of 86 and the right side has a value of 84. Both sides have 8 tens, but 86 has more ones than 84.
- True: 800 is the value of the 8 in 846, and on the left side, there are only 4 hundreds, so I know 846 is more.
- False: both sides have 3 hundreds, but the value of 3 in 330 is 30 and the other side has 3 ones, so it's less.
- True: 550 has 5 hundreds and 5 tens, but 505 has 5 hundreds and 5 ones.

Launch

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

Activity

- Share and record answers and strategy.
- Repeat with each statement.

Synthesis

- "How could expanded form help you decide whether the expression $330 < 300 + 3$ is true or false?" (I knew that 30 is 3 tens and 3 is only 3 ones, so 330 is greater than 303.)

Activity 1

🕒 15 min

Compare and Explain

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.4

The purpose of this activity is for students to compare three-digit numbers based on their understanding of place value. They are invited to explain or show their thinking in any way that makes sense to them. A number line is provided. Students may revise their thinking after locating the numbers on the number line, or may choose to draw diagrams to represent their thinking. During the activity synthesis, methods based on comparing the value of digits by place are highlighted.

For the last problem, students persevere in problem solving as there are many ways to make most of inequalities true but students will need to think strategically in order to fill out all of them. In particular, 810 can be used in the first, second, or fourth inequality but it needs to be used in the fourth because it is the *only* number on the list that is larger than 793.

🕒 Access for Students with Disabilities

Representation: Develop Language and Symbols. Represent the problem in multiple ways to support understanding of the situation. For example, have one group member place the numbers on a number line to verify which number is greater. Another option is to have one group member make the numbers using base-ten blocks to prove which is greater.

Supports accessibility for: Conceptual Processing, Organization

Student-facing Task Statement

Compare the numbers.

1.

521 $>, =, \text{ or } <$ 523

Explain or show your thinking. If it helps, use a diagram or number line.

2.

889 $>, =, \text{ or } <$ 878

Launch

- Groups of 2
- “In the warm-up, you saw that different forms of writing a number can help you think about the value of each digit.”
- Write 564 504 on the board.
- “What symbol would make this expression true? Explain.” ($>$, because they both have 500, but the first number has 6 tens or 60 and the second number has 0 tens.)

Explain or show your thinking. If it helps, use a diagram or number line.

3. Place the numbers in the blanks to make each comparison true. Use each number only once. Use base-ten diagrams or a number line if it helps.

810 529 752 495

- a. _____ $>$ 519
- b. 687 $<$ _____
- c. _____ $<$ 501
- d. _____ $>$ 793

Student Responses

1. $521 < 523$ Sample responses:
 - They have the same number of hundreds and tens, but 523 has more ones.
 - Student uses a base-ten diagram to show 5 hundreds 2 tens and 1 one compared to 5 hundreds 2 tens and 3 ones.
2. $889 > 878$ Sample responses:
 - They have the same number of hundreds, but 889 has more tens, so it is greater.
 - Student represents both numbers on the number line and indicates 889 is larger because it is farther to the right.
3.
 - a. $529 > 519$
 - b. $687 < 752$
 - c. $495 < 501$
 - d. $810 > 793$

Activity

- “Today you will be comparing three-digit numbers by looking at place value.”
- “If it helps, you can use base-ten diagrams or expanded form to help you think about place value.”
- “Try it on your own and then compare with your partner.”
- 5 minutes: independent work time
- 5 minutes: partner work time
- Monitor for students who compare the numbers without drawing base-ten diagrams or using a number line.

Synthesis

- Display $564 > 504$.
- Display $500 + 60 + 4 > 500 + 4$.
- “We decided that this was a true statement. How does the expanded form of these numbers help justify our thinking?” (We can see the value of each place, so we can compare each digit.)
- Invite previously selected students to share how they compared numbers without drawing diagrams or using the number line.

Advancing Student Thinking

If students write comparison statements that are not true, consider asking:

- “Could you read each statement aloud?”
- “How did you know your statement is true?”
- “How could you use the base-ten diagram or number line to help you show whether your statement is true or false?”

Activity 2

🕒 20 min

Play Greatest of Them All

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.4

The purpose of this activity is for students to learn stage 2 of the Greatest of Them All center. Students use digit cards to create the greatest possible number. As each student draws a card, they choose where to write it on the recording sheet. Once a digit is placed, it can't be moved. Students compare their numbers using $<$, $>$, or $=$. The player with the greater number in each round gets a point.

Students should remove cards that show 10 from their deck.

🌐 Access for English Learners

MLR2 Collect and Display. Synthesis: Direct attention to the words collected and displayed on the anchor chart from the previous lessons. Invite students to borrow place value language from the display as needed.

Advances: Conversing, Reading

Materials to Gather

Number cards 0–10

Materials to Copy

Greatest of Them All Stage 2 Recording Sheet
(groups of 1)

Launch

- Groups of 2
- Give each group a set of number cards and

each student a recording sheet.

- “Now you will be playing the Greatest of Them All center with your partner.”
- “You will try to make the greatest three-digit number you can.”
- Display number cards and recording sheet.
- Demonstrate picking a card.
- “If I pick a (2), I need to decide whether I want to put it in the hundreds, tens, or ones place to make the largest three-digit number.”
- “Where do you think I should put it?” (I think it should go in the ones place because it is a low number. In the hundreds place, it would only be 200.)
- 30 seconds: quiet think time
- Share responses.
- “At the same time, my partner is picking cards and building a number, too.”
- “Take turns picking a card and writing each digit in a space.”
- “Read your comparison aloud to your partner.”

Activity

- “Now play a few rounds with your partner.”
- 15 minutes: partner work time

Synthesis

- Select a group to share a comparison statement. For example: $654 > 349$ and $349 < 654$.
- “I noticed that partners had different comparison statements for the same numbers. How can they both be true?”
- “If I draw an 8, where should I choose to place it and why?” (I would put it in the hundreds place since it’s almost the highest number I could draw. I might not get 9. With 800, I have a good chance for my number to be larger

than my partner's.)

Lesson Synthesis

🕒 10 min

"Today we compared numbers by looking at the digits and thought about how to use digits to make the greatest number possible."

Display digits 2, 0, and 9 (in a vertical list).

"Using these digits, what is the greatest number you can make?" (920)

"Using these digits, what is the smallest three-digit number you can make?" (209, because a three-digit number cannot start with zero.)

Suggested Centers

- Get Your Numbers in Order (1–5), Stage 1: Two-digit Numbers (Supporting)
- Jump the Line (2–5), Stage 1: Add and Subtract within 100 (Supporting)

Complete Cool-Down

Response to Student Thinking

Students write comparison statements that are not true.

Next Day Support

- Launch Activity 1 with a discussion about this cool-down.

Lesson 12: Order Numbers

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.4, 2.NBT.B.8

Teacher-facing Learning Goals

- Order three-digit numbers using place value understanding and the relative position of numbers on a number line.

Student-facing Learning Goals

- Let's put numbers in order.

Lesson Purpose

The purpose of this lesson is for students to order numbers from least to greatest and greatest to least.

In previous lessons, students learned to compare three-digit numbers using the value of each digit. They have used the number line and base-ten diagrams to compare numbers and explain their thinking.

The purpose of this lesson is for students to compare three-digit numbers and place them in order from least to greatest and from greatest to least. Throughout the lesson, students are encouraged to use their understanding of place value to reason about the correct order of a set of numbers. They also use the number line as a tool for sequencing numbers and visualizing the relative distance between numbers. The work of this lesson helps students consolidate their understanding of the counting sequence, the base-ten structure of numbers, and the relative position of numbers on the number line. These understandings will be helpful as students add and subtract within 1,000 in future lessons.

This lesson has a Student Section Summary.

Access for:

Students with Disabilities

- Representation (Activity 2)

English Learners

- MLR8 (Activity 1)

Instructional Routines

Number Talk (Warm-up)

Lesson Timeline

Warm-up	10 min
Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

In future lessons, students will add and subtract within 1,000. How does the work of this unit prepare them for that work? How can centers be used to strengthen students' understanding of place value?

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

⌚ 5 min

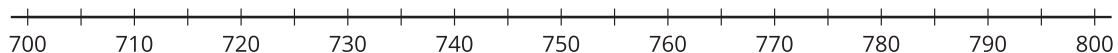
Estimate and Order

Standards Alignments

Addressing 2.NBT.A.4

Student-facing Task Statement

1. Estimate the location and label 748, 704, 762, 789, and 712 on the number line.



2. Order the numbers from least to greatest.

_____, _____, _____, _____, and _____

Student Responses

1. Students represent each number with a point on the number line in a reasonable location.
2. 704, 712, 748, 762, and 789

----- **Begin Lesson** -----

Warm-up

🕒 10 min

Number Talk: Subtract Tens

Standards Alignments

Addressing 2.NBT.B.8

The purpose of this Number Talk is to elicit strategies and understandings students have for mentally subtracting a multiple of 10 from a number. Building on their understanding of place value, students subtract tens from tens. These understandings help students develop fluency and will be helpful in later lessons when students will need to be able to subtract using strategies based on place value.

Instructional Routines

Number Talk

Student-facing Task Statement

Find the value of each expression mentally.

- $80 - 50$
- $87 - 50$
- $76 - 40$
- $66 - 30$

Student Responses

- 30: $8 - 5 = 3$, so $80 - 50 = 30$.
- 37: $80 - 30 = 50$ and you still have the 7, so $50 + 7 = 57$.
- 36: $70 - 40 = 30$ and you still have the 6, so $30 + 6 = 36$.
- 36: $60 - 30 = 30$ and you still have 6, so $30 + 6 = 36$. It's like the last 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 strategies.
- Keep expressions and work displayed.
- Repeat with each expression.

Synthesis

- "How could the third expression help you find the value of the last expression?" (76 is 10 more than 66 and 30 is 10 less than 40, so the difference between the two numbers is the same.)

Activity 1

🕒 15 min

Who is Out of Order?

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.4

The purpose of this activity is for students to analyze a mistake in ordering numbers (MP3). When placing numbers in order from least to greatest, students can compare using their understanding of place value. However, they see that, unlike comparing just two numbers, when comparing sets of numbers, there is more to keep track of. Students learn that a number line provides a linear representation to help organize numbers in sequence and visualize the relative distance between numbers.

🌐 Access for English Learners

MLR8 Discussion Supports. Display sentence frames to support partner discussion: “I agree with ____ because . . .” and “I disagree with ____ because . . .”

Advances: Speaking, Conversing

Student-facing Task Statement

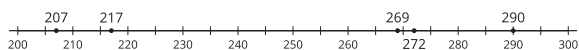
Kiran and Andre put a list of numbers in order from least to greatest.

Kiran

Andre

207, 217, 272, 269, 290 207, 217, 269, 272, 290

Andre disagreed with Kiran, so he used a number line to justify his answer.



Who do you agree with? Why?

Be prepared to explain your thinking. Use what you know about place value or the number line to justify your reasoning.

Launch

- Groups of 2

Activity

- “Kiran and Andre put some numbers in order from least to greatest.”
- “Andre disagreed with Kiran, so he used a number line to justify his answer. Whom do you agree with?”
- “Think about this on your own and be prepared to explain your thinking.”
- 3 minutes: independent work time
- “Discuss with a partner using what you know about place value or the number line to justify your reasoning.”
- 5 minutes: partner work time

Student Responses

Sample response:

- I agree with Andre. 269 should be before 272 when you order least to greatest because it has less tens.
- I agree with Andre. On the number line, 269 is more to the left. It is before 270, so it is less than 272.

- Monitor for students who:
 - use precise place value language to describe the correct placement of 269 and 272 in the list
 - use the number line to explain that a list of numbers from least to greatest should match the placement of the numbers on the number line from left to right

Synthesis

- Invite previously selected students to share using precise place value language.
- Invite a student to explain using the number line.
- “When we order numbers, we can use what we know about place value. We can also think about the counting sequence and use a number line to help us see the numbers in order.”

Activity 2

🕒 20 min

Order Numbers

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.4

The purpose of this activity is for students to order numbers. Students estimate the location and label numbers on a number line, and then write them in order from least to greatest or greatest to least. For the third set of numbers, students may order the numbers using any method that makes sense to them. Students reflect on how the number line can help us organize numbers (MP5). Throughout the activity, monitor for the way students explain their reasoning based on place value and the relative position of numbers on the number line.

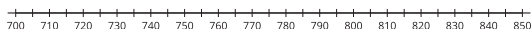
Access for Students with Disabilities

Representation: Access for Perception. Use index cards, clothespins, and string to demonstrate the number line. Give students the numbers on the index cards and have them physically act it out by finding their place on the number line.

Supports accessibility for: Memory, Organization, Conceptual Processing

Student-facing Task Statement

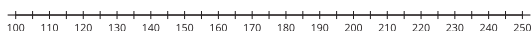
1. Estimate the location of 839, 765, 788, 815, and 719 on the number line. Mark each number with a point. Label the point with the number it represents.



Order the numbers from *least to greatest*.

_____, _____, _____, _____, _____

2. Estimate the location of 199, 245, 173, 218, and 137 on the number line. Mark each number with a point. Label the point with the number it represents.



Order the numbers from *greatest to least*.

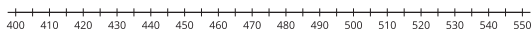
_____, _____, _____, _____, _____

3. Order the numbers from *least to greatest*.

545, 454, 405, 504, and 445

_____, _____, _____, _____, _____

Explain or show your thinking. Use the number line if it helps.



4. Was it more helpful for you to put the numbers in order first or put them on the number line first? Explain.

Launch

- Groups of 2

Activity

- “Now you will have a chance to order numbers.”
- “Sometimes you will put them in order from least to greatest, and sometimes it will be from greatest to least.”
- 10 minutes: independent work time
- “Compare with a partner. Explain your thinking.”
- 5 minutes: partner discussion
- Monitor for students who order the last set of numbers by:
 - explaining their reasoning using precise place value language
 - placing each number on the number line before ordering the numbers

Synthesis

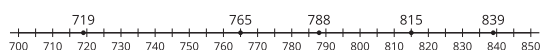
- Invite previously identified students to share their reasoning.
- “How are the numbers you labeled on the number line the same as the list of numbers you wrote? How are they different?” (For least to greatest, its the same. The difference is the number line shows the distance between each number,



but the list of numbers shows them right next to each other.)

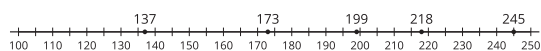
Student Responses

1.



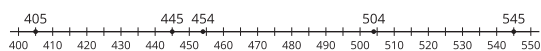
719, 765, 788, 815, and 839

2.



245, 218, 199, 173, and 137

3. 405, 445, 454, 504, and 545



4. Sample response: When you locate them on the number line first, they are already in order.

Advancing Student Thinking

If students locate the numbers on the number line, but reverse the order given in the problem, consider asking:

- “How did you decide the order of your numbers?”
- “Does your list show the numbers in order from least to greatest or greatest to least?”

Lesson Synthesis

🕒 10 min

“During this unit we have used different representations to help us think about large numbers. Think about all the work we did with numbers up to 1,000.”

“Which representations help you make sense of large numbers and compare them to one another? Using a base-ten diagram, looking at the digits, or using a number line?”

Share and record responses.

“I noticed some students prefer one representation for place value, but a different one when comparing or ordering numbers. It is good to know what works best for you and when to use it.”

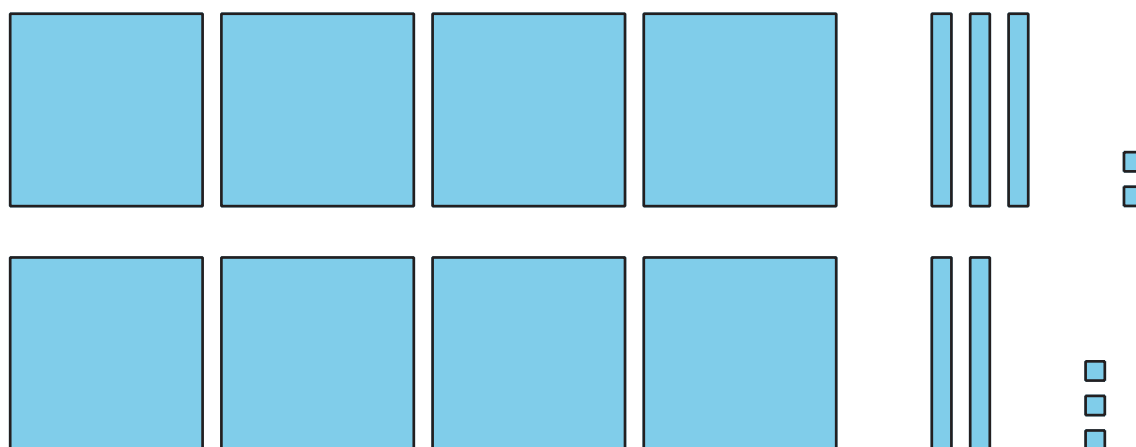
Suggested Centers

- Mystery Number (1–4), Stage 2: Three-digit Numbers (Addressing)
- Greatest of Them All (1–5), Stage 2: Three-digit Numbers (Addressing)
- Get Your Numbers in Order (1–5), Stage 1: Two-digit Numbers (Supporting)
- Jump the Line (2–5), Stage 1: Add and Subtract within 100 (Supporting)

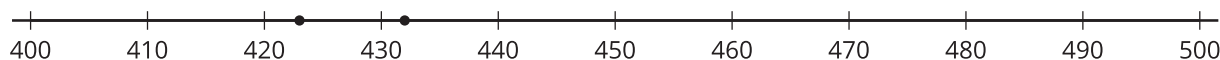
Student Section Summary

In this section, we learned how to compare three-digit numbers. We used number lines, base-ten diagrams, and the value of the digits in base-ten numerals to help us compare and explain our thinking.

Diagrams are helpful when comparing numbers because you can see and compare hundreds to hundreds, tens to tens, and ones to ones. We learned that you can do this with the digits too.



The number line shows the numbers in order, so we can see which number is the largest based on its location.



We also wrote expressions using the $>$, $<$, and $=$ symbols.

$$432 > 424$$

432 is greater than 424

$$424 < 432$$

424 is less than 432

Complete Cool-Down

Response to Student Thinking

Students write the numbers in an order other than least to greatest.

The work of this lesson builds on the number line concepts developed in a prior unit.

Next Day Support

- Before the next day's warm-up, pass back the cool-down and work in small groups to make corrections.

Prior Unit Support

Grade 2, Unit 4, Section A: The Structure of the Number Line

Lesson 13: Center Day 2 (Optional)

Standards Alignments

Addressing 2.NBT.A, 2.NBT.A.1, 2.NBT.A.4
 Building Towards 2.NBT.A.4

Teacher-facing Learning Goals

- Order, compare, and describe three-digit numbers using place value understanding.

Student-facing Learning Goals

- Let's work on place value.

Lesson Purpose

The purpose of this lesson is for students to order, compare, and describe three-digit numbers using their understanding of place value.

This lesson is optional because it is an opportunity for extra practice that not all classes may need. In Activity 1, students learn a new stage of the Get Your Numbers in Order center, which was first introduced in grade 1. In this stage, students use their understanding of relative magnitude to order three-digit numbers. In Activity 2, students choose 2 activities to work on that provide practice with place value, addition, and subtraction.

Instructional Routines

How Many Do You See? (Warm-up)

Materials to Gather

- Dry erase markers: Activity 1
- Materials from previous centers: Activity 2
- Number cards 0–10: Activity 1
- Sheet protectors: Activity 1

Materials to Copy

- Get Your Numbers in Order Stage 2 Gameboard (groups of 2): Activity 1

Lesson Timeline

Warm-up	10 min
Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min

Teacher Reflection Question

What opportunities are you giving students to reflect on their understanding of the mathematical content?

----- Begin Lesson -----

Warm-up

⌚ 10 min

How Many Do You See: Place Value

Standards Alignments

Addressing	2.NBT.A.1
Building Towards	2.NBT.A.4

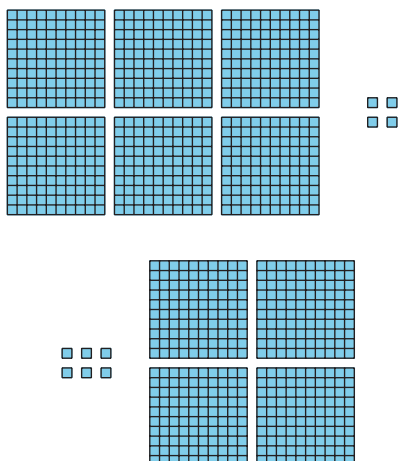
The purpose of this How Many Do You See is for students to use what they know about place value representations to describe and compare the images they see. In the synthesis, students describe how the number of blocks stays the same (6 of one unit, 4 of the other), but the value that the blocks represent changes dramatically. When students connect these differences to differences in the place value of the digits in the three-digit numbers the diagrams represent, they look for and make sense of structure (MP7).

Instructional Routines

How Many Do You See?

Student-facing Task Statement

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

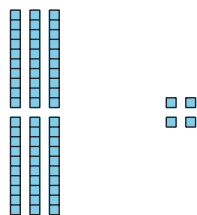


Launch

- 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.



Student Responses

Sample responses:

- 604: I saw 6 hundreds and 4 ones.
- 406: I saw they were different sizes. I counted the 4 hundreds and then the 6 ones.
- 64: I saw 6 tens and 4 ones.

Synthesis

- “How are these images the same? How are they different?” (They each show 6 of a unit and 4 of a unit. They each have one unit that has 0. They are different because the size of the unit is different. They each represent a different number.)
- “Which image represents the greatest value? How do you know?” (604 is the greatest because it has 6 hundreds.)

Activity 1

🕒 15 min

Introduce Get Your Numbers in Order, Three-digit Numbers

Standards Alignments

Addressing 2.NBT.A.4

The purpose of this activity is for students to learn stage 2 of the Get Your Numbers in Order center. Students use their understanding of relative magnitude to order three-digit numbers. They take turns placing numbers on the board and must make sure that the numbers across the board go from least to greatest. If a number cannot be placed on the game board students say “pass” and get 1 point. Then it is their partner’s turn. The player with the fewest points when all the boxes on the board are filled is the winner. Students should remove the cards that show 10 before they start.

Materials to Gather

Dry erase markers, Number cards 0–10, Sheet protectors

Materials to Copy

Get Your Numbers in Order Stage 2 Gameboard (groups of 2)

Launch

- Groups of 2

- Give each group a set of number cards, a game board, and a dry erase marker.
- “We are going to learn a new way to play the Get Your Numbers in Order center.”
- “Let’s play one round together. You can all be my partner.”
- Choose three cards, make a three-digit number, and place it on the board.
- Invite a student to draw three cards and consult with the class on what number to create and where to place it on the game board.
- Continue taking turns to complete a round. Share thinking about where to place numbers.
- “Now you will play with a partner.”

Activity

- 8–10 minutes: partner work time

Synthesis

- “How did you decide where to place your numbers on the game board?”
-

Activity 2

 20 min

Centers: Choice Time

Standards Alignments

Addressing 2.NBT.A, 2.NBT.A.4

The purpose of this activity is for students to choose from activities that focus on place value in three-digit numbers.

Students choose from any stage of previously introduced centers.

- Get Your Numbers in Order
- Greatest of Them All
- Mystery Number

Materials to Gather

Materials from previous centers

Required Preparation

Gather materials from previous centers:

- Get Your Numbers In Order, Stage 2
- Greatest Of Them All, Stage 2
- Mystery Number, Stage 2

Student-facing Task Statement

Choose a center.

Get Your Numbers in Order



Greatest of Them All



Mystery Number



Launch

- “Now you will choose from centers we have already learned. One of the choices is to continue with Get Your Numbers in Order.”
- 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

Synthesis

- “What did you like about the activities you worked on today?”

Lesson Synthesis

🕒 10 min

"Tell your partner one thing you were working on during centers today. How did the activity you chose help you work on it?"

Lesson 14: Hundreds of Objects (Optional)

Standards Alignments

Addressing	2.NBT.A.1, 2.NBT.A.2
Building Towards	2.NBT.A.2

Teacher-facing Learning Goals

- Count and represent three-digit numbers using place value understanding.

Student-facing Learning Goals

- Let's use place value to count real-world objects.

Lesson Purpose

The purpose of this lesson is for students to apply their understanding of place value to count real-world objects.

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 this lesson, students build on their previous understandings and experiences with representations of numbers between 100 and 999. Students use their understanding of the base-ten structure of numbers to count and represent quantities of real-world objects (MP7). When students investigate the advantages and disadvantages of different methods of counting a large number of objects and then choose a method to use they critique the reasoning of others and model with mathematics (MP3, MP4).

Access for:

Students with Disabilities

- Representation (Activity 2)

English Learners

- MLR7 (Activity 2)

Instructional Routines

Notice and Wonder (Warm-up)

Materials to Gather

- Collections of objects: Activity 2
- Sticky notes: Activity 2

Lesson Timeline

Warm-up	10 min
Activity 1	10 min
Activity 2	25 min
Lesson Synthesis	10 min

Teacher Reflection Question

How do students transfer their understanding of base-ten representations to real-world situations? How can you support students with making these connections outside of math class?

Begin Lesson
Warm-up

🕒 10 min

Notice and Wonder: Jar of Beans

Standards Alignments

Building Towards 2.NBT.A.2

This warm-up prompts students to make sense of a problem before solving it, by familiarizing themselves with a context and the mathematics that might be involved. In the next activity, students will see three different ways the amount of beans in a cup are counted.

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

- “Can you imagine counting out so many beans? How would you do it?”
- “We are going to keep thinking about those counting ideas in our first activity today.”

Student Responses

Students may notice:

- There is a jar of beans.
- The jar is not full.
- The jar looks half full or half empty.

Students may wonder:

- How many beans are in the jar?
- How many can fit in the jar?

Activity 1

🕒 10 min

Cup of Beans

Standards Alignments

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

The purpose of this activity is for students to compare methods that can be used to count numbers between 100 and 999. Students see images of beans that are put in groups of 5 and another in groups of 10. A third image uses groups of 100, groups of 10, and single beans.

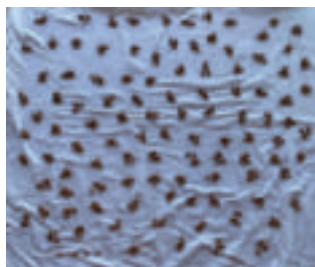
Students make connections to place value and their understanding of the base-ten structure (MP2, MP7). They also consider opportunities for accuracy and efficiency when they articulate pros and cons for each method.

Student-facing Task Statement

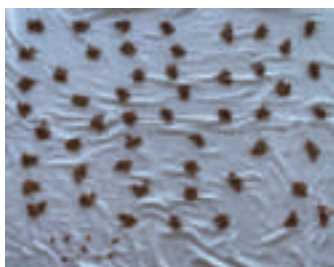


Clare, Noah, and Jada counted a cup of dried beans. They each came up with 529 beans. The following pictures show how each of them counted.

Jada's counting strategy:



Noah's counting strategy:



Clare's counting strategy:

Launch

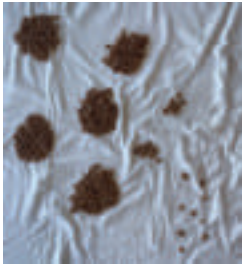
- Groups of 2
- Display image of a cup of beans or display a cup of beans.
- Read the context aloud.

Activity

- 1 minute: quiet think time
- 5 minutes: small-group discussion
- Monitor for students who:
 - describe the organization and group sizes in each method
 - describe Clare's method in terms of hundreds, tens, and ones
 - discuss ideas such as efficiency (how long it takes) and accuracy (chances of mistakes)

Synthesis

- Invite previously selected students to share their observations.
- "Which of these strategies do you believe would be the fastest or slowest? Explain."
- "Do you think it would be easier to make a mistake using one of these strategies? Which one and why?"
- "Which strategy do you prefer? Why?"



1. What do you notice about each of their strategies?
2. What is helpful about each strategy?
3. What is challenging about each strategy?

Student Responses

1. Answers vary.
2. Jada's strategy is helpful because it is easy to count out 5 beans really fast. Noah's strategy is helpful because counting by 10s is easy. Clare's strategy is helpful because it is easy to see how many you have when you're all done.
3. Jada's strategy is challenging because there are a lot of groups of 5s by the end. Noah's strategy also has a lot of groups of 10s. Clare's strategy is challenging because you have to always check when you have 10 piles of ten so you can combine them to make 100, and when you're done, there could be a mistake in a big pile and you wouldn't know.

Activity 2

🕒 25 min

Lots of Beans

Standards Alignments

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

The purpose of this activity for students to choose their own method to count between 100 and 999 objects accurately and efficiently. Students should be encouraged to use their understanding of place value.

Access for Students with Disabilities

Representation: Internalize Comprehension. Provide students with a graphic organizer, such as a sorting mat with various circles to organize the groups of beans and record how many beans are in each group.

Supports accessibility for: Organization, Memory

Access for English Learners

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

Advances: Representing, Conversing

Materials to Gather

Collections of objects, Sticky notes

Required Preparation

- Each group of 2 to 4 students will need between one-half cup to one cup of beans or other small objects to count. If real-world objects are unavailable, centimeter cubes could be used instead.

Student-facing Task Statement

Organize and count your beans. Use the space to record your thinking.

Gallery walk questions:

- How does this strategy help you count their beans?
- How can this be made clearer?
- How is this strategy the same as your strategy? How is it different?
- Does your group have more or fewer beans? Explain your reasoning.

Launch

- Groups of 2 or 4.
- Give students each group $\frac{1}{2}$ to 1 cup of beans and a sticky note.
- "You will use any method you prefer to count the beans and then write your result on one sticky note and then fold it to hide your result."

Activity

- 5–10 minutes: small-group work time
- Monitor for students who make groups of 5, groups of 10, or groups of 100.

Student Responses

Students count their beans in a way that makes sense to them.

- Display and read the gallery walk questions.
- “Think about these questions as you walk around.”
- 10 minutes: gallery walk

Synthesis

- “When you organized your beans and counted them, did you feel confident about your results? Why?”
- Invite students to share answers to the gallery walk questions.

Advancing Student Thinking

If students double count beans or groups of beans ask, “How can you organize your piles to make sure you did not double count some of the piles?”

Lesson Synthesis

🕒 10 min

“Today, we used strategies we have been studying about numbers between 100 and 999 to count a large amount of beans.”

“What are important things to remember when you count a large number of objects? What is important when you represent your strategy so that it is clear to others?”

Suggested Centers

- Mystery Number (1–4), Stage 2: Three-digit Numbers (Addressing)
- Greatest of Them All (1–5), Stage 2: Three-digit Numbers (Addressing)
- Get Your Numbers in Order (1–5), Stage 2: Three-digit Numbers (Addressing)



Family Support Materials

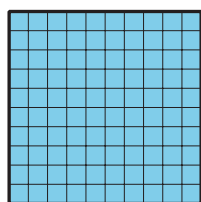
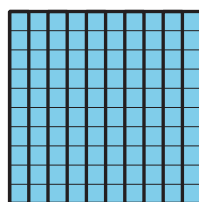
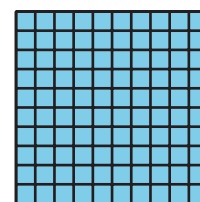
Family Support Materials

Numbers to 1,000

In this unit, students extend their understanding of the base-ten system to include numbers to 1,000.

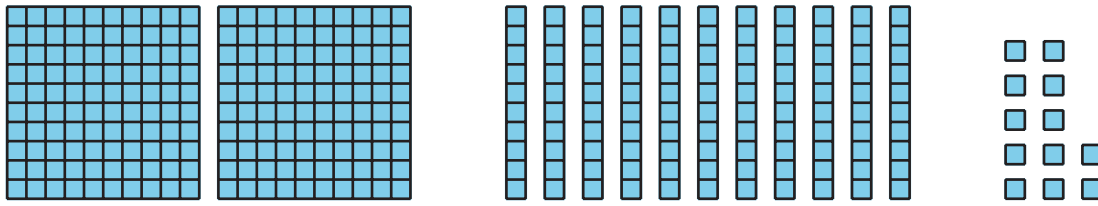
Section A: The Value of Three Digits

In this section, the unit of a hundred is introduced. Students begin by looking at the large square base-ten block, and its corresponding base-ten drawing, to visualize 100, and to establish that 1 hundred equals 10 tens, which equals 100 ones.



After students develop an understanding of a hundred as a unit, students learn that the digits in three-digit numbers represent amounts of hundreds, tens, and ones. Students read and write three-digit numbers in different forms, including using base-ten numerals, number names, and expanded form.

Students write expressions and equations based on the base-ten blocks and base-ten drawings that they see. They recognize that the value of the digits in a three-digit number is revealed when using the fewest number of blocks to represent the number.



For example, the picture shows 2 hundreds, 11 tens, and 12 ones. However, students recognize that they will need to exchange 10 of the ones for a ten and 10 of the tens for a hundred to find the value of their number. After doing so, they recognize that they have 3 hundreds, 2 tens, and 2 ones for a value of 322.

Section B: Compare and Order Numbers within 1000

In this section, students continue to deepen their understanding of numbers to 1,000 using place value understanding and the number line diagram. As students recall the structure of the number line from the previous unit, they use this structure and place value understanding to locate, compare, and order numbers on the number line.

As students locate or estimate the location of three-digit numbers on number lines, they demonstrate an understanding of the number's relative distance from zero, as well as the place value of the digits. This understanding helps them to compare and order three-digit numbers. For example, to order numbers, students can first locate them on the number line. Then, the numbers will be in order from least to greatest as students look from left to right on the number line.

In addition to using the number line to compare three-digit numbers, students also use familiar place value representations such as base-ten blocks and base-ten diagrams. Students compare and order numbers and write the comparisons using the symbols, $>$, $<$, and $=$.

Try it at home!

Near the end of the unit, ask your student to think about the number 593 and complete the following tasks:

- Write the number as a number name and in expanded form.
- Draw an amount of base-ten blocks that has the same value.
- Create a number line from 500 to 600 and place the number on a number line.
- Compare the number to 539 using either $>$, $<$, or $=$.

Questions that may be helpful as they work:

- What pieces of information were helpful?
- Can you explain to me how you solved the problem?
- Could you have drawn a different amount of base-ten blocks?

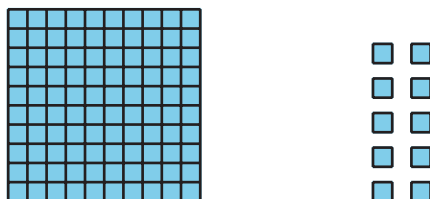
Unit Assessments

Check Your Readiness A and B
End-of-Unit Assessment

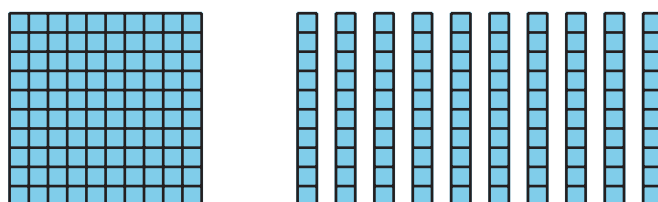
Numbers to 1,000: Section A Checkpoint

1. Select 2 representations of 200.

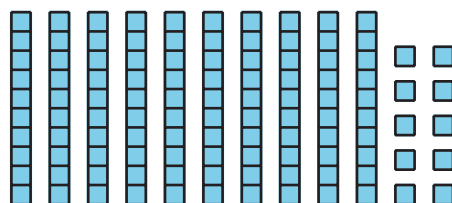
A.



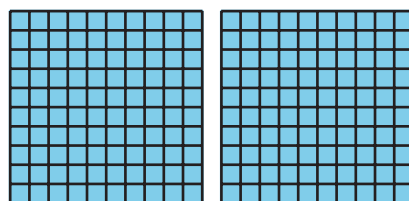
B.



C.



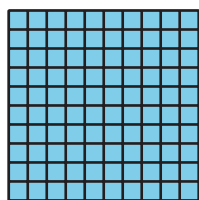
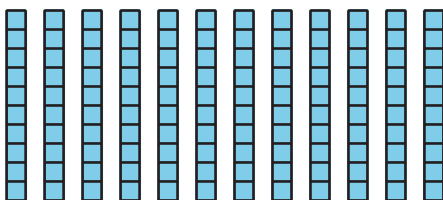
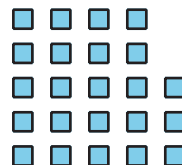
D.



E.



2. What value do these blocks represent?



a. Write your answer using numbers.

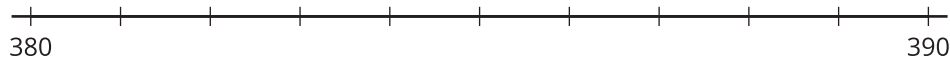
b. Write your answer using words.

3. Represent 492 using expanded form and words.

Grade 2 Unit 5
Section B Checkpoint

Numbers to 1,000: Section B Checkpoint

1. Label the tick marks on the number line.

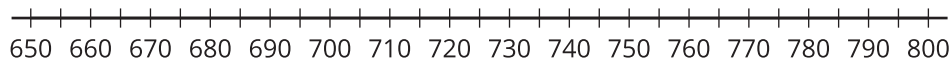


2. What digit can go in the blank to make the comparison true?

$$8______9 < 821$$

3. Order the numbers from **greatest to least**. Use the number line if it helps.

- 697
- 769
- 679
- 709
- 796

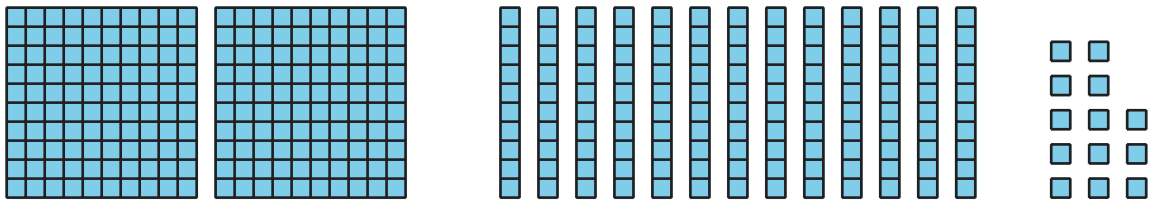


Numbers to 1,000: End-of-Unit Assessment

1. Label the tick marks on the number line.



2. What number do the base-ten blocks represent? Explain your reasoning.



3. Select 2 ways to represent the number 518.

- A. $500 + 10 + 8$
- B. $5 + 1 + 8$
- C. 5 hundreds and 18 tens
- D. 51 tens and 8 ones
- E. 4 hundreds and 11 tens

4. Select 3 true statements.

- A. $512 = 152$
- B. $375 = 300 + 70 + 5$
- C. $613 > 609$
- D. $200 + 80 + 4 = 482$
- E. $781 < 871$

5. Fill in each blank with $<$, $=$, or $>$ to make a true statement.

a. 511 _____ 151

b. $497 + 100 + 100$ _____ 703

c. 138 _____ $118 + 10 + 10$

6. Here are the three-digit numbers that can be made with 2, 5, and 7:

527 275 725 257 752 572

a. Which numbers on the list have 7 hundreds?

b. Andre says the largest number is 725 because it has the most hundreds. Explain why Andre is not correct.

c. List the numbers from least to greatest. Explain your reasoning.

Assessment Answer Keys

Check Your Readiness A and B
End-of-Unit Assessment

Assessment Answer Keys

Assessment: Section A Checkpoint

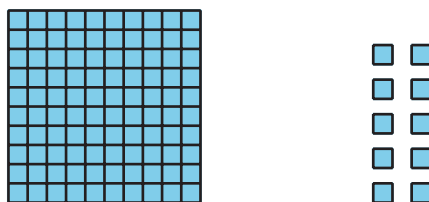
Problem 1

Goals Assessed

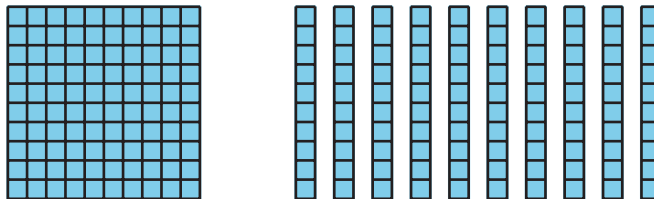
- Use place value understanding to compose and decompose three-digit numbers.

Select 2 representations of 200.

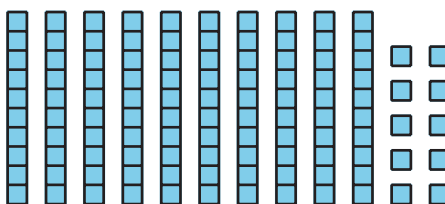
A.



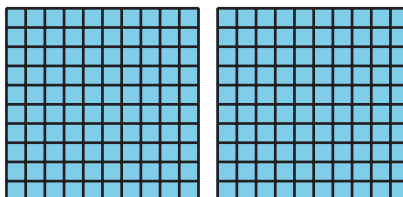
B.

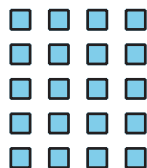


C.



D.





Solution

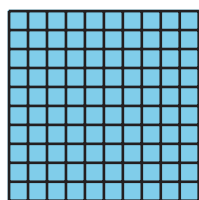
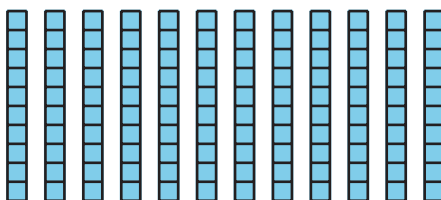
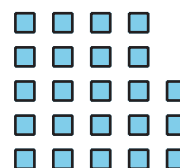
["B", "D"]

Problem 2

Goals Assessed

- Read, write, and represent three-digit numbers using base-ten numerals and expanded form.
- Use place value understanding to compose and decompose three-digit numbers.

What value do these blocks represent?



- Write your answer using numbers.
- Write your answer using words.

Solution

Sample responses:

- 243
- Two hundred forty-three

Problem 3**Goals Assessed**

- Read, write, and represent three-digit numbers using base-ten numerals and expanded form.
- Use place value understanding to compose and decompose three-digit numbers.

Represent 492 using expanded form and words.

Solution

Expanded form: $400 + 90 + 2$

Words: Four hundred ninety-two

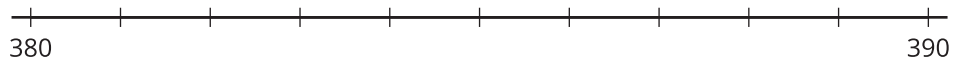
Assessment: Section B Checkpoint

Problem 1

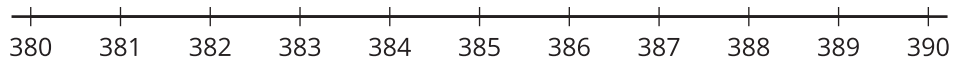
Goals Assessed

- Represent whole numbers up to 1,000 as lengths from 0 on a number line.

Label the tick marks on the number line.



Solution



Problem 2

Goals Assessed

- Compare and order three-digit numbers using place value understanding and the relative position of numbers on a number line.

What digit can go in the blank to make the comparison true?

$$8______9 < 821$$

Solution

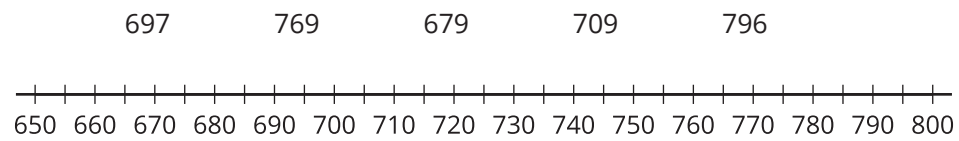
0 or 1

Problem 3

Goals Assessed

- Compare and order three-digit numbers using place value understanding and the relative position of numbers on a number line.

Order the numbers from **greatest to least**. Use the number line if it helps.



Solution

796, 769, 709, 697, 679

Assessment: End-of-Unit Assessment

Problem 1

Standards Alignments

Addressing 2.NBT.A.1.a, 2.NBT.A.2

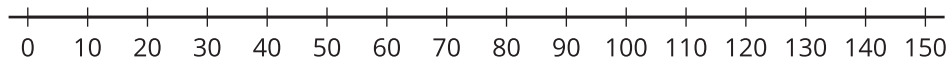
Narrative

Students label the tick marks on a number line starting at 0 where the tick marks represent tens. This is a version of skip counting by 10 where the students record the count as labels on the number line. This gives an opportunity to make sure students know how to skip count by 10 and that they appropriately label the tenth tick mark as 100.

Label the tick marks on the number line.



Solution



Problem 2

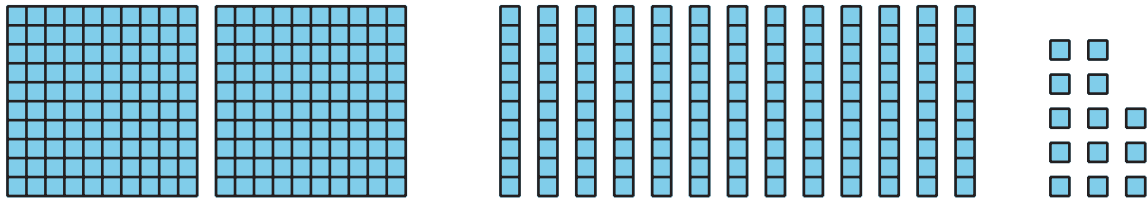
Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3

Narrative

Students write a number represented by a base-ten block diagram. Students need to group 10 tens into 1 hundred and 10 ones into 1 ten in order to write the number in standard form. Students may miscount the tens since there are a lot of them and write a number such as 333 or 353. These students still have a good understanding of regrouping.

What number do the base-ten blocks represent? Explain your reasoning.



Solution

343, I can make a hundred from 10 tens so that makes 3 hundreds and 3 tens. Then I make a ten from 10 ones and I have 3 hundreds, 4 tens, and 3 ones. That's 343.

Problem 3

Standards Alignments

Addressing 2.NBT.A.3

Narrative

Students examine different ways to express a number. They may select B if they do not understand the place value meaning of the digits in a 3-digit number. They may select C if they confuse tens and ones. They may select E if they focus on the 5 and 1 in 518 and forget about the 8 ones.

Select **2** ways to represent the number 518.

- A. $500 + 10 + 8$
- B. $5 + 1 + 8$
- C. 5 hundreds and 18 tens
- D. 51 tens and 8 ones
- E. 4 hundreds and 11 tens

Solution

["A", "D"]

Problem 4

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.3, 2.NBT.A.4

Narrative

Students compare 3-digit numbers, some of which are given in expanded form. Students who select A or D need more practice with the meaning of place value. Students who do not select B need more work with expanded form and students who do not select C or E need more work understanding the meaning of the three digits in a 3-digit number.

Select **3** true statements.

- A. $512 = 152$
- B. $375 = 300 + 70 + 5$
- C. $613 > 609$
- D. $200 + 80 + 4 = 482$
- E. $781 < 871$

Solution

["B", "C", "E"]

Problem 5

Standards Alignments

Addressing 2.NBT.A.3, 2.NBT.A.4

Narrative

Students compare the value of expressions. The expressions involve adding tens or hundreds with no composition of hundreds needed so the focus is on understanding place value. Students who do not perform well on this item may not be comfortable using the symbols $<$ and $>$ or they may be struggling to understand place value and addition. Consider asking them to write the two expressions in the problem as numbers as an intermediate step in order to diagnose where they are struggling.

Fill in each blank with $<$, $=$, or $>$ to make a true statement.

- a. 511 _____ 151
- b. $497 + 100 + 100$ _____ 703
- c. 138 _____ $118 + 10 + 10$

Solution

- a. $511 > 151$
- b. $497 + 100 + 100 < 703$
- c. $138 = 118 + 10 + 10$

Problem 6

Standards Alignments

Addressing 2.NBT.A.1, 2.NBT.A.4

Narrative

Students list all the three-digit numbers that can be made with the digits 2, 5, and 7 in increasing order. Some students may be prepared to make the list without the scaffold of the first two problems which help to identify the two largest numbers and think about the strategy of looking first at the hundreds and then at other place values. None of the numbers are actually very close to one another (they all differ by at least one ten) but students need to understand place value well to list them in the correct order.

Here are the three-digit numbers that can be made with 2, 5, and 7:

527 275 725 257 752 572

- a. Which numbers on the list have 7 hundreds?
- b. Andre says the largest number is 725 because it has the most hundreds. Explain why Andre is not correct.
- c. List the numbers from least to greatest. Explain your reasoning.

Solution

- a. 725 and 752

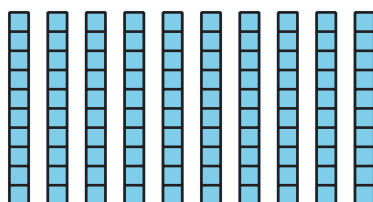
- b. Andre is right that 725 is larger than 275, 257, 527, and 572 because these numbers have fewer hundreds. But 752 also has 7 hundreds and 52 is greater than 27 so 752 is greater than 725.
- c. 257, 275, 527, 572, 725, 752, I started with the numbers that had the fewest hundreds, 257 and 275. Since 57 is less than 75, 257 is less than 275. Then I put the numbers with 5 hundreds and $527 < 572$ because 72 is more than 27. Then I put the two numbers with 7 hundreds.

Lesson Cool Downs

Lesson 1: How Do We Compose a Hundred?

Cool Down: Fewer Blocks

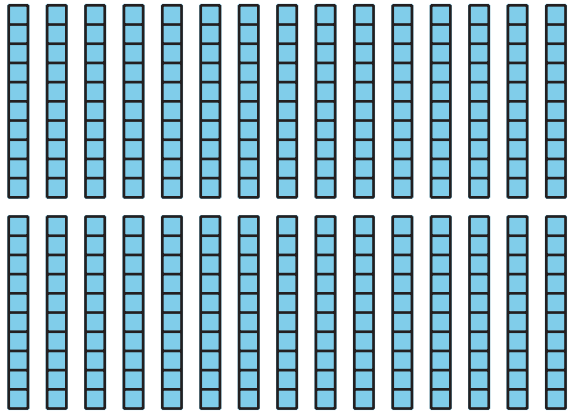
Andre represented a number with base-ten blocks.



1. What number did Andre represent?
2. How could he represent this number with fewer blocks? Show your thinking with words or a base-ten diagram.

Lesson 2: Make Hundreds

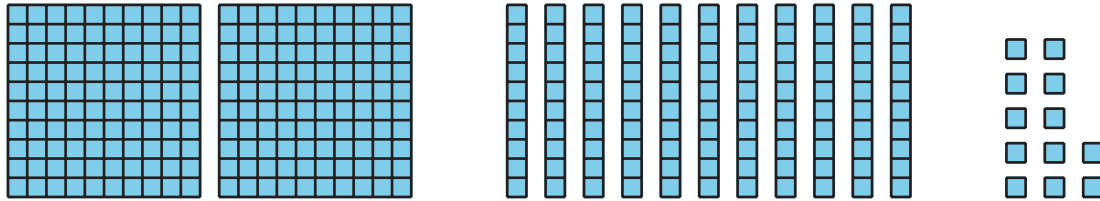
Cool Down: How Many?



- 1. How many do you see? _____
- 2. How could you represent the same value in a different way? Show your thinking using a diagram or words.

Lesson 3: Compose Three-digit Numbers

Cool Down: How Many Blocks?



How many of each?

1. There are _____ hundreds.
2. There are _____ tens.
3. There are _____ ones.
4. Draw a base-ten diagram to represent the same total value with the fewest number of blocks.

Lesson 4: Write Three-digit Numbers

Cool Down: Order of Digits

Find the numbers that make each equation true.

1. $638 = \underline{\hspace{2cm}}$ ones + $\underline{\hspace{2cm}}$ hundreds + $\underline{\hspace{2cm}}$ tens

2. $7 \text{ tens} + 2 \text{ ones} + 4 \text{ hundreds} = \underline{\hspace{2cm}}$

Lesson 5: Expanded Form of Numbers

Cool Down: Three-digit Numbers in Expanded Form

1. Represent the number 375 as the sum of hundreds, tens, and ones.

Expanded form: _____

2. Represent $200 + 40 + 7$ as a three-digit number.

Three-digit number: _____

Lesson 6: Represent Numbers in Different Ways

Cool Down: Words and Other Ways

1. Represent 147 with words.

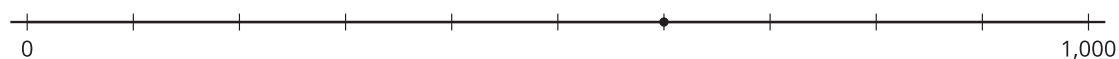
2. Represent 147 in one other way.

Lesson 8: Three-digit Numbers on the Number Line

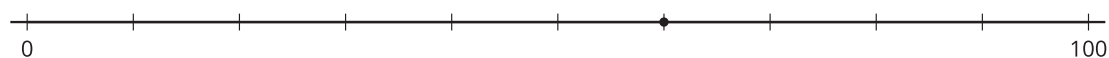
Cool Down: Large Numbers on the Number Line

1. Label the point with a number it represents.

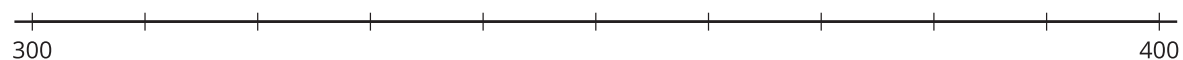
a.



b.



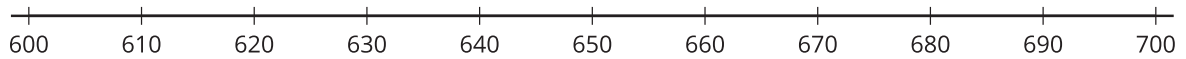
2. Locate and label 370 on the number line.



Lesson 9: Compare Numbers on the Number Line

Cool Down: Compare Numbers on the Number Line

1. Estimate the location and label 681 and 618 on the number line.



2. Use $<$, $>$, or $=$ to compare 681 and 618.

3. Use the number line to explain how you know your comparison is true.

Lesson 10: Place Value Comparisons (Part 1)

Cool Down: Count and Compare

1. Write the value of each base-ten diagram as a three-digit number. Use the symbols $>$, $=$, or $<$ to compare the numbers.



_____ _____

2. Explain how you know.

Lesson 11: Place Value Comparisons (Part 2)

Cool Down: Place Value Comparisons

Place one of the numbers in each blank to make each comparison true.
Use each number only once.

112

701

398

1. _____ $>$ 671

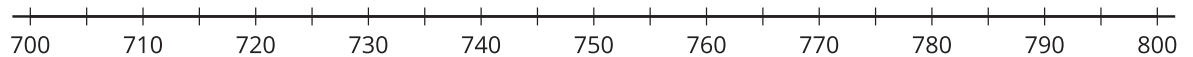
2. 393 $<$ _____

3. _____ $<$ 127

Lesson 12: Order Numbers

Cool Down: Estimate and Order

1. Estimate the location and label 748, 704, 762, 789, and 712 on the number line.



2. Order the numbers from least to greatest.

_____, _____, _____, _____, and _____

Instructional Masters

Instructional Masters for Numbers to 1,000

address	title	students written per copy	on?	requires cutting?	card stock recommended?	color paper recommended?
Activity Grade2.5.7.1	Mystery Number Stage 2 Directions	2	no	no	no	no
Center	Mystery Number Stage 2 Directions	2	no	no	no	no
Activity Grade2.5.13.1	Get Your Numbers in Order Stage 2 Gameboard	2	yes	no	no	no
Center	Get Your Numbers in Order Stage 2 Gameboard	2	yes	no	no	no
Activity Grade2.5.11.2	Greatest of Them All Stage 2 Recording Sheet	1	yes	no	no	no
Center	Greatest of Them All Stage 2 Recording Sheet	1	yes	no	no	no
Center	Greatest of Them All Stage 1 Recording Sheet	1	yes	no	no	no
Center	Mystery Number Stage 1 Directions	2	no	no	no	no
Center	Jump the Line Stage 1 Gameboard	2	no	no	no	no
Center	Jump the Line Stage 1 Spinners	2	no	no	no	no
Center	Number Puzzles Digit Cards	2	no	yes	no	no
Center	Number Puzzles Digit Cards	2	no	yes	no	no
Center	Number Puzzles Digit Cards	2	no	yes	no	no
Center	Number Puzzles Addition and Subtraction Stage 2 Gameboard	1	no	no	no	no
Center	Number Puzzles Addition and Subtraction Stage 3 Gameboard	2	no	no	no	no

Center	Number Puzzles Addition Stage 4 Gameboard	2	no	no	no	no
Center	Get Your Numbers in Order Stage 1 Gameboard	2	yes	no	no	no

Mystery Number Stage 2 Directions

Directions:

- Partner A:
 - Pick 3 cards and make a mystery three-digit number. Don't show your partner!
 - Give your partner a clue about your mystery number. You can use the sentences below to help you give clues, or make up your own.
- Partner B:
 - Guess your partner's mystery number.
- If Partner B guesses the mystery number, switch roles.
- If Partner B does not guess the mystery number, Partner A gives another clue. Go back and forth guessing the number and giving clues until Partner B guesses the mystery number.



Example clues:

- The mystery number has more than ____ hundreds.
- The mystery number has less than ____ ones.
- The mystery number is greater than ____.
- The mystery number is less than ____.
- The mystery number has more hundreds than ones.
- The mystery number has more ones than tens.

Mystery Number Stage 2 Directions

Directions:

- Partner A:
 - Pick 3 cards and make a mystery three-digit number. Don't show your partner!
 - Give your partner a clue about your mystery number. You can use the sentences below to help you give clues, or make up your own.
- Partner B:
 - Guess your partner's mystery number.
- If Partner B guesses the mystery number, switch roles.
- If Partner B does not guess the mystery number, Partner A gives another clue. Go back and forth guessing the number and giving clues until Partner B guesses the mystery number.



Example clues:

- The mystery number has more than ____ hundreds.
- The mystery number has less than ____ ones.
- The mystery number is greater than ____.
- The mystery number is less than ____.
- The mystery number has more hundreds than ones.
- The mystery number has more ones than tens.

Greatest of Them All Stage 2 Recording Sheet

Directions:

- Partner A chooses a number card and writes the number in one of the blanks for Round 1.
- Partner B does the same.
- Repeat until each partner has a three-digit number.
- Write a comparison using $<$, $>$, or $=$.
- The partner with the greater number wins the round.

Round 1:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 2:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 3:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 4:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 5:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 6:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Greatest of Them All Stage 2 Recording Sheet

Directions:

- Partner A chooses a number card and writes the number in one of the blanks for Round 1.
- Partner B does the same.
- Repeat until each partner has a three-digit number.
- Write a comparison using $<$, $>$, or $=$.
- The partner with the greater number wins the round.

Round 1:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 2:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 3:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 4:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 5:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 6:

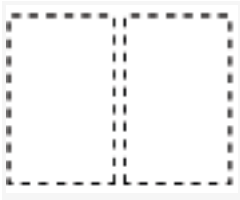
My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Greatest of Them All Stage 1 Recording Sheet

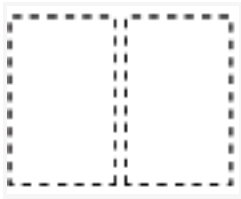
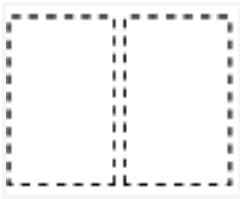
Directions:

- Partner A chooses a number card and writes the number in one of the blanks for Round 1.
- Partner B does the same.
- Repeat until each partner has a two-digit number.
- Write a comparison using $<$, $>$, or $=$.
- The partner with the greater number wins the round.

Round 1:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 2:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 3:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 4:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 5:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Round 6:

My Number	My Partner's Number
	
Compare using $<$, $>$, or $=$.	

Mystery Number Stage 1 Directions

Directions:

- Partner A:
 - Pick 2 cards and make a mystery two-digit number. Don't show your partner!
 - Give your partner a clue about your mystery number. You can use the sentences below to help you give clues, or make up your own.
- Partner B:
 - Guess your partner's mystery number.
- If Partner B guesses the mystery number, switch roles.
- If Partner B does not guess the mystery number, Partner A gives another clue. Go back and forth guessing the number and giving clues until Partner B guesses the mystery number.



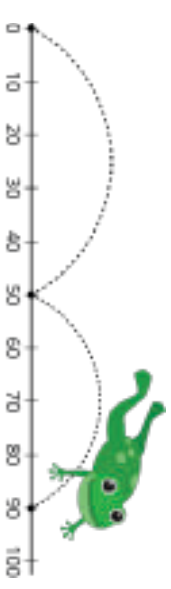
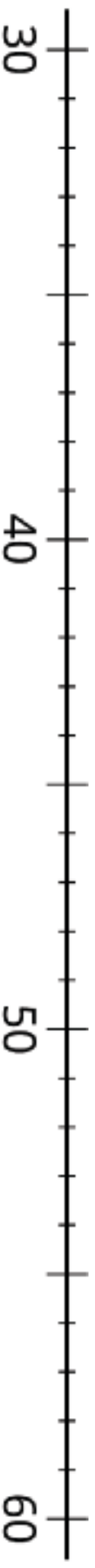
Example clues:

- The mystery number has more than ____ tens.
- The mystery number has less than ____ ones.
- The mystery number is greater than ____.
- The mystery number is less than ____.
- The mystery number has more tens than ones.
- The mystery number has more ones than tens.

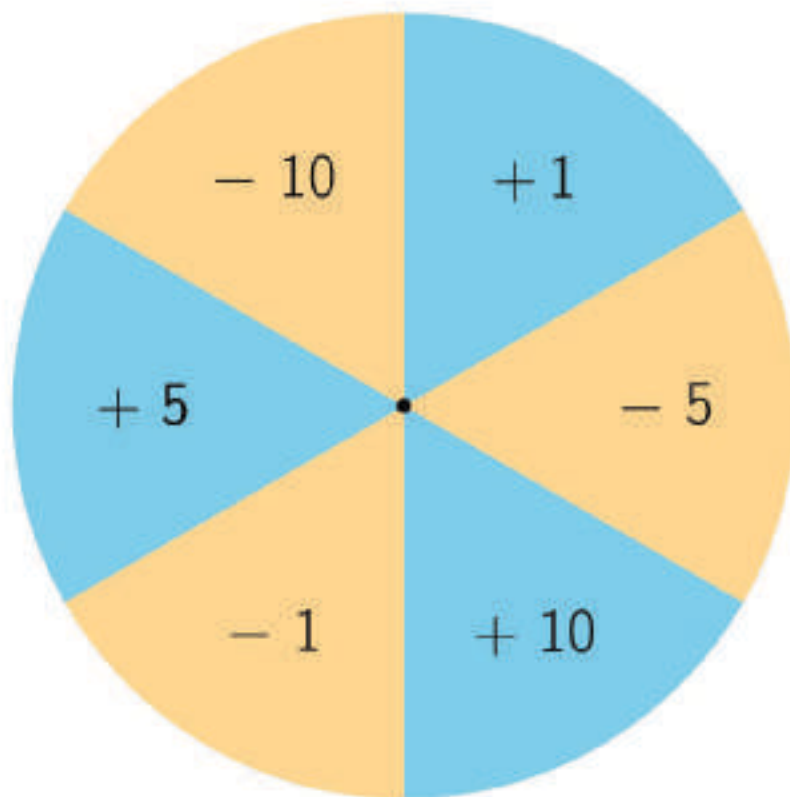
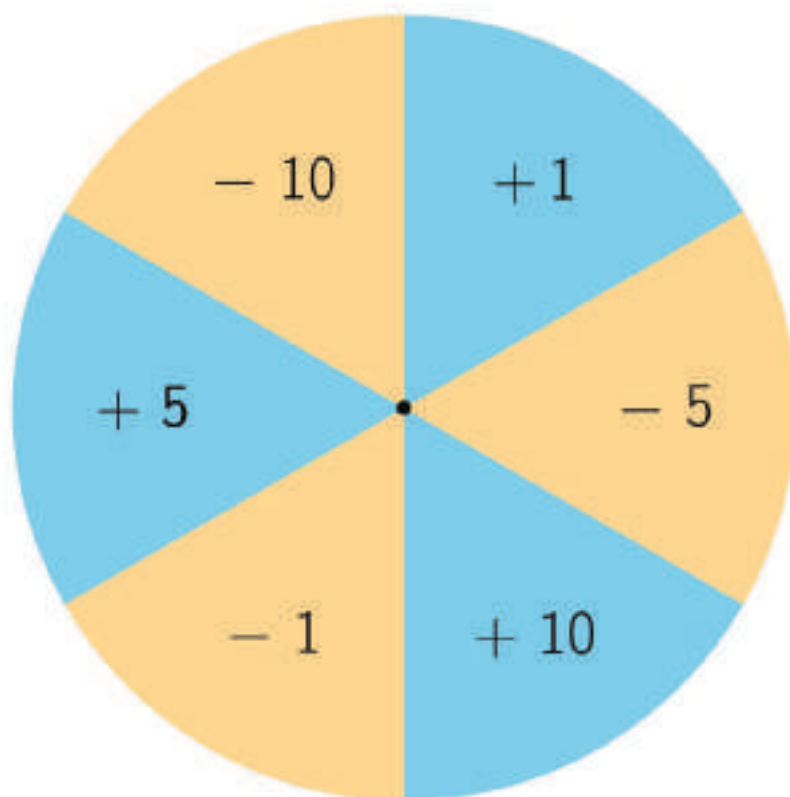
Jump the Line Stage 1 Gameboard

Directions:

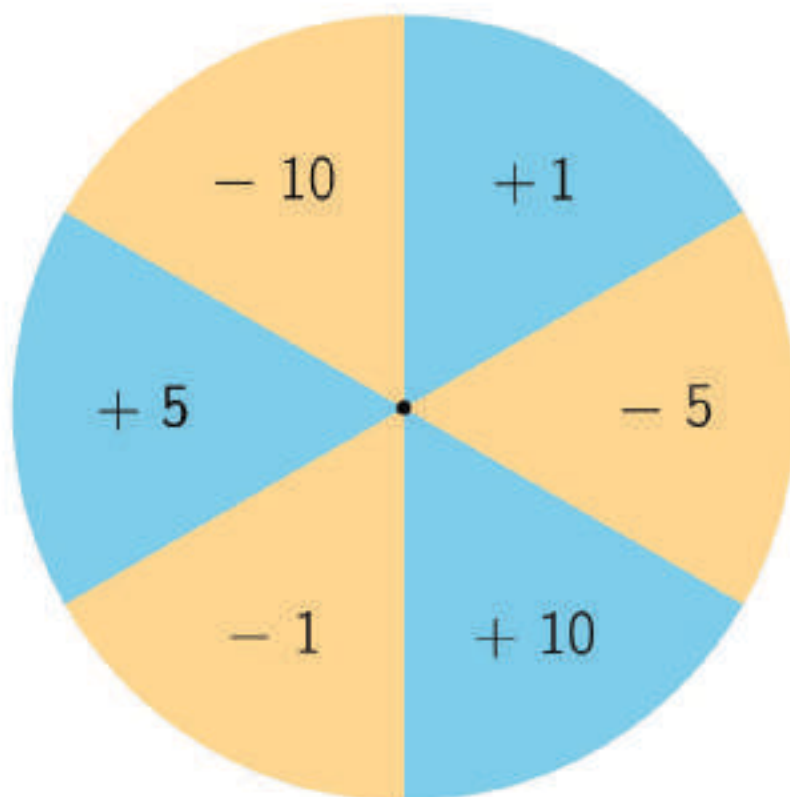
- Together with your partner, decide on 3 target numbers and mark them on your number line.
- On your turn:
 - Spin all 3 spinners. Decide which moves you want to use on your turn.
 - Mark where you ended up on the number line.
- Take turns spinning and moving on the number line. The first partner to land on 2 of the target numbers wins.



Jump the Line Stage 1 Spinners



Jump the Line Stage 1 Spinners



Number Puzzles Digit Cards

[illegible]

Number Puzzles Digit Cards

[illegible]

Number Puzzles Digit Cards

[illegible]

Puzzle 1

Make each equation true. Use number cards 0-9.

$11 = \square + \square$	$11 = \square - \square$
$11 = \square + \square$	$11 = \square - 2$
$11 = \square - 8$	$11 = \square - 1$

Puzzle 2

Make each equation true. Use number cards 0-9.

$14 = \square + \square$	$14 = \square + 7$
$14 = 8 + \square$	$14 = \square - 4$
$14 = \square - \square$	$14 = \square - \square$

Puzzle 3

Make each equation true. Use number cards 0-9.

$17 = 1$ <div><div></div></div> $+$ <div><div></div></div>	$17 = 1$ <div><div></div></div> $-$ <div><div></div></div>
$17 = 1$ <div><div></div></div> $-$ <div><div></div></div>	$17 = 1$ <div><div></div></div> $+$ <div><div></div></div>
$17 = 1$ <div><div></div></div> $-$ <div><div></div></div>	$17 = 1$ <div><div></div></div> $+$ <div><div></div></div>

Puzzle 4

Make each equation true. Use number cards 0-9.

$18 = 1$ <div></div> $+$ <div></div>	$18 = 1$ <div></div> $-$ <div></div>
$18 = 1$ <div></div> $+$ <div></div>	$18 = 1$ <div></div> $+$ 4
$18 = 1$ <div></div> $+$ <div></div>	$18 = 1$ <div></div> $-$ 1

Puzzle 5

Make each equation true. Use number cards 0-9.

$19 = 1$ <div><div></div></div> $+$ <div><div></div></div>	$19 = 1$ <div><div></div></div> $+$ <div><div></div></div>
$19 = 1$ <div><div></div></div> $+$ <div><div></div></div>	$19 = 1$ <div><div></div></div> $+$ <div><div></div></div>
$19 = 1$ <div><div></div></div> $-$ <div><div></div></div>	$19 = 1$ <div><div></div></div> $+$ <div><div></div></div>

Puzzle 1

Directions: Make each equation true. Use number cards 0-5.

$75 = 71 + \square$	$75 = \square + 70$
$75 = \square + 65$	$75 = 43 + \square$

Puzzle 2

Directions: Make each equation true. Use number cards 0-5.

$98 = 47 + \square\square$	$98 = 1\square + 88$
$98 = \square + 95$	$98 = \square\square + 56$

Puzzle 3

Directions: Make each equation true. Use number cards 0-5.

$46 = \square 0 + 16$	$46 = \square \square + 26$
$46 = \square + 42$	$46 = 31 + \square \square$

Puzzle 4

Directions: Make each equation true. Use number cards 0-9.

$98 = 97 + \boxed{}$	$98 = 9 \boxed{} + 2$
$98 = \boxed{}0 + 8$	$98 = 58 + \boxed{}0$
$98 = \boxed{}0 + 68$	$98 = 78 + \boxed{}\boxed{}$
$98 = 22 + \boxed{}6$	$98 = \boxed{}\boxed{} + 13$

Puzzle 5

Directions: Make each equation true. Use number cards 0-9.

$59 = \square 0 + 9$	$59 = 55 + \square$
$59 = \square + 52$	$59 = 47 + 1 + \square$
$59 = 1 \square + 41$	$59 = 33 + 2 + \square$
$59 = \square \square + 29$	$59 = 40 + \square \square$

Puzzle 1

Make each equation true. Use number cards 0-9.

$63 = 5 \square + 8$	$63 = 5 \square + \square$
$63 = 1 \square + 52$	$63 = 3 \square + \square 9$
$63 = \square + 24$	$63 = 3 \square + 25$

Puzzle 2

Make each equation true. Use number cards 0-9.

$80 = 3 \square + 41$	$80 = \square 3 + 7$
$80 = 27 + \square \square$	$80 = 1 \square + 6 \square$
$80 = \square \square + 16$	$80 = 5 \square + 29$

Puzzle 3

Make each equation true. Use number cards 0-9.

$27 = 1 \square + 14$	$27 = 1 \square + 1 \square$
$27 = 9 + \square \square$	$27 = 2 \square + 3$
$2 \square = 1 \square + 11$	$27 = 1 \square + 8$

Puzzle 4

Make each equation true. Use number cards 0-9.

$92 = \square\square + 6$	$92 = \square + 83$
$92 = 7\square + 1\square$	$92 = 9\square + \square$
$92 = 39 + 5\square$	$92 = 78 + \square\square$

Puzzle 5

Make each equation true. Use number cards 0-9.

$46 =$  $+ 23$	$46 = 1$  $+ 31$
$46 = 4$  $+ 5$	$46 = 3$  $+ 7$
$46 = 3$  $+ 10$	$46 = 3$  $+ 8$

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