Lesson Overview

LESSON 13

Read and Write Three-Digit Numbers

Lesson Objectives

Content Objectives

- Identify the place value of each digit in a three-digit number.
- Model three-digit numbers.
- Interpret a model and write the number value.

Language Objectives

- Read three-digit numbers aloud.
- Write three-digit numbers in expanded form.
- Write a three-digit number shown with base-ten blocks.

Prerequisite Skills

- Understand two-digit numbers.
- Count by tens and hundreds.
- Add two-digit numbers.

Standards for Mathematical Practice (SMP)

SMPs 1, 2, 3, 4, 5, and 6 are integrated in every lesson through the *Try-Discuss-Connect* routine.*

In addition, this lesson particularly emphasizes the following SMPs:

5 Use appropriate tools strategically.

7 Look for and make use of structure.

8 Look for and express regularity in repeated reasoning.

*See page 303k to see how every lesson includes these SMPs.

Lesson Vocabulary

- **expanded form** a way a number is written to show the place value of each digit. For example, 249 = 200 + 40 + 9.

Review the following key terms.

- **digit** a symbol used to write numbers. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.
- **place value** the value assigned to a digit based on its position in a number. For example, the 2 in 324 is in the tens place and has a value of 2 tens or 20.

Learning Progression

In Grade 1 students explore the concept of place value by bundling 10 ones to make groups of 10. They learn to read numbers between 9 and 99 and write them using proper digit placement.

In Grade 2 place value with two-digit numbers is reinforced as students add and subtract two-digit numbers. In the previous lesson, students used models to recognize one hundred as 100 ones or 10 tens and to write numbers in charts in order to emphasize the relationship between the digit in a number and its value. In this lesson, students continue to make sense of the place-value system through active involvement. They recognize a digit as a symbol that tells the number of groups of hundreds, tens, or ones in a number, and then they learn to read the numbers accurately.

In Grades 3 and 4 a firm grasp of place value is essential for students to fully understand addition and subtraction of numbers with more than three digits as well as to understand multiplication and division of multi-digit numbers. Place-value concepts are extended to decimal places in Grade 5.

Lesson Pacing Guide

Whole Class Instruction

SESSION 1 **Explore** *45–60 min*	**Interactive Tutorial*** *(Optional)* *Prerequisite Review:* Understand Hundreds, Tens, and Ones **Reading and Writing Three-Digit Numbers** • Start *5 min* • Try It *10 min* • Discuss It *10 min* • Connect It *15 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 321–322
SESSION 2 **Develop** *45–60 min*	**Finding the Value of Three-Digit Numbers** • Start *5 min* • Try It *10 min* • Discuss It *10 min* • Picture Its & Model It *5 min* • Connect It *10 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 327–328 **Fluency** Finding the Value of Three-Digit Numbers
SESSION 3 **Develop** *45–60 min*	**Writing Three-Digit Numbers** • Start *5 min* • Try It *10 min* • Discuss It *10 min* • Picture It & Model It *5 min* • Connect It *10 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 333–334 **Fluency** Writing Three-Digit Numbers
SESSION 4 **Refine** *45–60 min*	**Reading and Writing Three-Digit Numbers** • Start *5 min* • Example *10 min* • Apply It *25 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 337–338
SESSION 5 **Refine** *45–60 min*	**Reading and Writing Three-Digit Numbers** • Start *5 min* • Apply It *15 min* • Small Group Differentiation *20 min* • Close: Exit Ticket *5 min*	**Lesson Quiz** or **Digital Comprehension Check**

Lesson Materials

Lesson *(Required)*	*Per student:* base-ten blocks (hundreds flats, tens rods, ones units), *Activity Sheet:* Hundreds Place-Value Chart
Activities	*Per student:* base-ten blocks; *Per pair:* base-ten blocks (hundreds flats, tens rods, ones units), 2 number cubes (1 white, 1 other color) *Activity Sheets:* Hundreds Place-Value Mat, Digit Cards: 0–9
Math Toolkit	base-ten blocks, hundreds place-value charts, 200 charts, open number lines, play money bills
Digital Math Tools	Base-Ten Blocks, Number Line

Teacher Toolbox

Small Group Differentiation

PREPARE

Ready Prerequisite Lessons

Grade 1
- Lesson 20 Counting to 120
- Lesson 21 Understand Tens and Ones

RETEACH

Tools for Instruction

Grade 1
- Lesson 20 Patterns on the Hundred Chart
- Lesson 21 Tens and Ones

Grade 2
- Lesson 13 Read and Write Three-Digit Numbers

REINFORCE

Math Center Activities

Grade 2
- Lesson 13 Three-Digit Number Vocabulary Match
- Lesson 13 Ways to Write a Number

EXTEND

Enrichment Activity

Grade 2
- Lesson 13 Two True and One False

*We continually update the Interactive Tutorials. Check the Teacher Toolbox for the most up-to-date offerings for this lesson.

LESSON 13

Connect to Family, Community, and Language Development

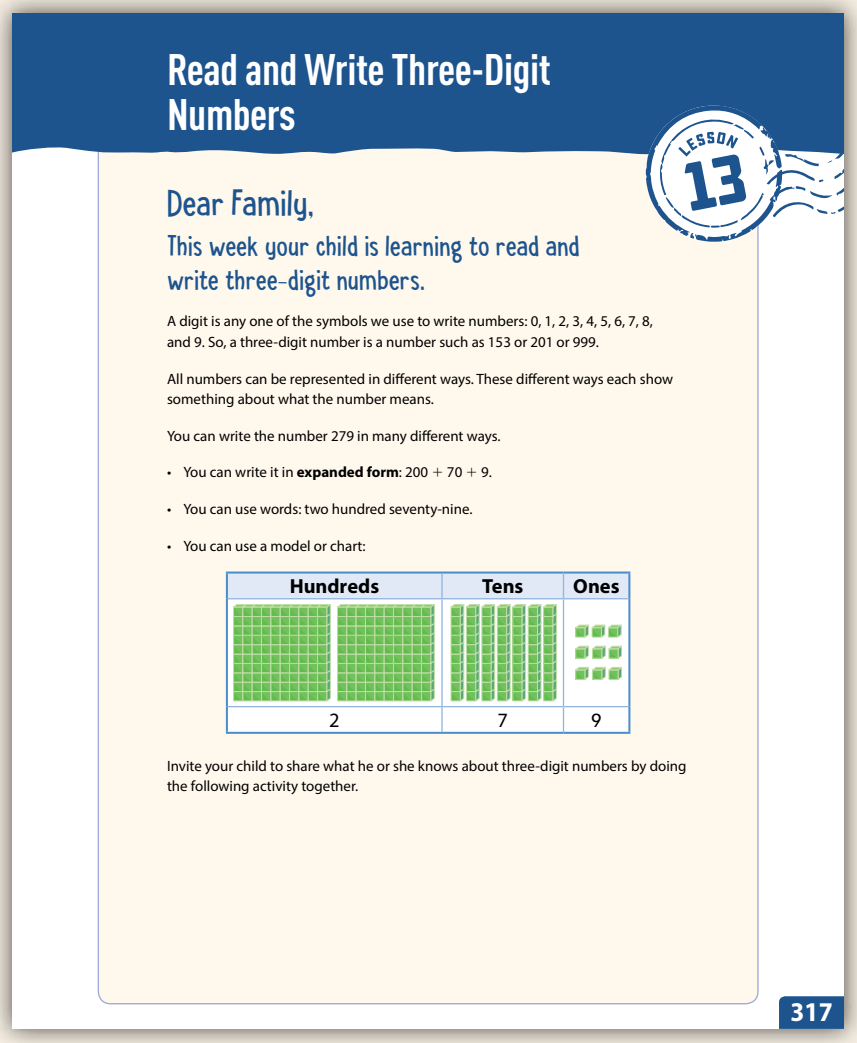
The following activities and instructional supports provide opportunities to foster school, family, and community involvement and partnerships.

Connect to Family

Use the **Family Letter**—which provides background information, math vocabulary, and an activity—to keep families apprised of what their child is learning and to encourage family involvement.

Available in Spanish

Teacher Toolbox



Read and Write Three-Digit Numbers

LESSON 13

Dear Family,

This week your child is learning to read and write three-digit numbers.

A digit is any one of the symbols we use to write numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. So, a three-digit number is a number such as 153 or 201 or 999.

All numbers can be represented in different ways. These different ways each show something about what the number means.

You can write the number 279 in many different ways.

- You can write it in **expanded form**: 200 + 70 + 9.
- You can use words: two hundred seventy-nine.
- You can use a model or chart:

Hundreds	Tens	Ones
2	7	9

Invite your child to share what he or she knows about three-digit numbers by doing the following activity together.

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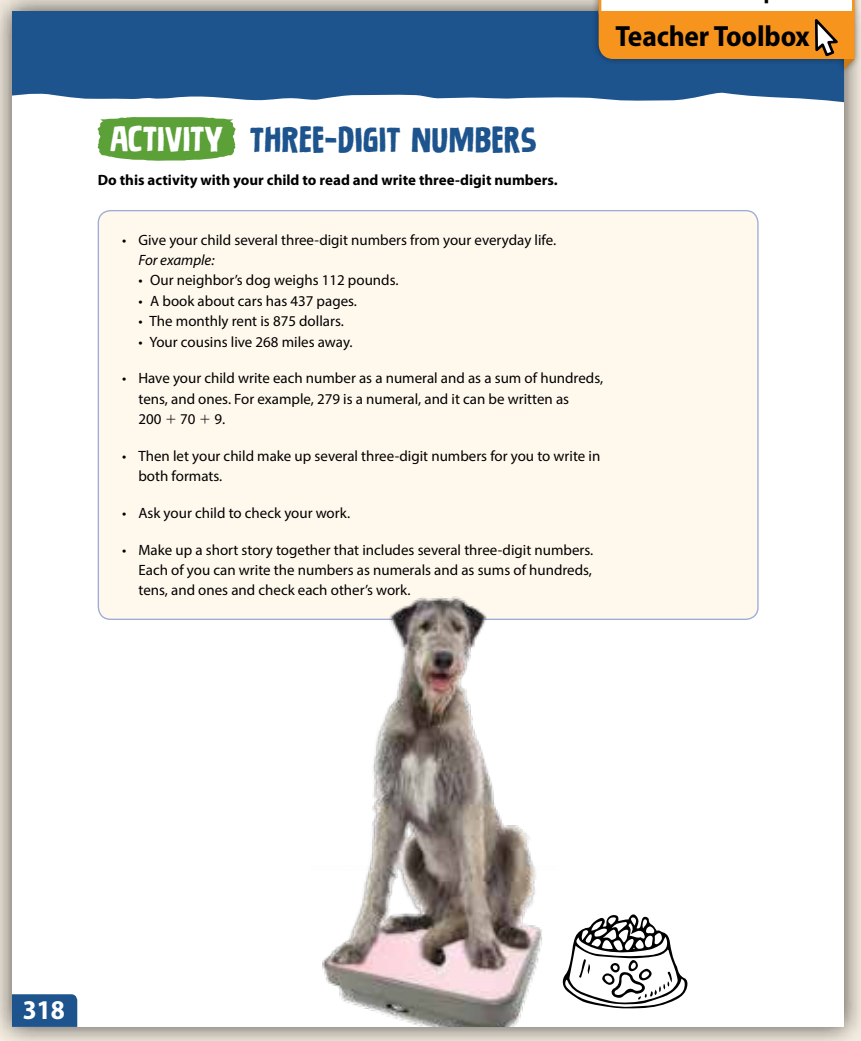

ACTIVITY THREE-DIGIT NUMBERS

Do this activity with your child to read and write three-digit numbers.

- Give your child several three-digit numbers from your everyday life.
  For example:
  - Our neighbor's dog weighs 112 pounds.
  - A book about cars has 437 pages.
  - The monthly rent is 875 dollars.
  - Your cousins live 268 miles away.
- Have your child write each number as a numeral and as a sum of hundreds, tens, and ones. For example, 279 is a numeral, and it can be written as 200 + 70 + 9.
- Then let your child make up several three-digit numbers for you to write in both formats.
- Ask your child to check your work.
- Make up a short story together that includes several three-digit numbers. Each of you can write the numbers as numerals and as sums of hundreds, tens, and ones and check each other's work.

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Goal

The goal of the Family Letter is to help students practice how to read and write three-digit numbers in multiple ways.

Students and family members discuss how to represent numbers with words, models, and in expanded form. Understanding how to read and write three-digit numbers will prepare students to compare numbers. Look at the *Three-Digit Numbers* activity and adjust it if necessary to connect with your students.

Math Talk at Home

Encourage students to discuss with family members situations where three-digit numbers are encountered in everyday life.

Conversation Starters Below are additional conversations starters students can write in their Family Letter or math journal to engage family members:

- *How many days are there in a year?*
- *How many miles away is the ocean? Tennessee? North Carolina? Louisiana?*
- *How many minutes can a football, baseball, or basketball game last?*

Connect to Community and Cultural Responsiveness

Use these activities to connect with and leverage the diverse backgrounds and experiences of all students.

Session 1 **Use with *Try It*.**

- Have students modify the problem, using objects that they personally have seen at parties for events such as weddings and graduations. Have them generate their own problems in which they think of objects they would see using hundreds (e.g.: balloons, chairs, flowers, ribbons, food items, candles, and so on). Have students come up with addition problems similar to those found in this session.

Session 3 **Use with *Apply It* problem 6.**

- Explain that friendship bracelets, such as the one shown in the picture, are often exchanged between children who are friends in the United States. Point out that, as the name suggests, the bracelets symbolize friendship. Encourage students to share other ways that they know, from personal experience or from exposure to different cultures, that children express friendship. Examples may include wearing similar clothes, using nicknames, and using a special greeting.

Connect to Language Development

For ELLs, use the Differentiated Instruction chart to plan and prepare for specific activities in every session.

ELL English Language Learners: Differentiated Instruction

Prepare for Session 1
Use with *Try It*.

Levels 1–3	Levels 2–4	Levels 3–5
Listening/Speaking Have students choral read the ***Try It*** problem. Refer to the anchor chart of three-digit numbers made in the previous lesson. Have students work with a partner to identify a model they can apply (such as base-ten blocks) to solve the problem. Then have students discuss their steps to solve the problem using the sequence words *first*, *next*, *then*, and *finally*. Once complete, have students share their process to solve the problem with another pair.	**Speaking/Writing** Have students choral read the ***Try It*** problem. Refer to the anchor chart of three-digit numbers made in the previous lesson. Ask students to form pairs and discuss which method will be used to support their answer. Then have students write their steps to solve the problem using the sequence words *first*, *next*, *then*, and *finally*. Once complete, have students read their sentences aloud to their partner.	**Reading/Writing** Have students read the ***Try It*** problem. Ask them to discuss their ideas for solving it with a partner. Refer to the anchor chart of three-digit numbers made in the previous lesson. Ask students to discuss which method will be used to support their answer. Have them select different models to apply. Then have them write their steps to solve the problem using the sequence words *first*, *next*, *then*, and *finally*. Once complete, have students read their sentences aloud to their partner.

LESSON 13

SESSION 1 Explore

Purpose In this session, students draw on their knowledge of hundreds, tens, and ones to write three-digit numbers in different ways. They explore and share strategies involving composing numbers from hundreds, tens, and ones. They look ahead to determine how the value of a digit in a number is based upon its placement in that number and write numbers in standard and word form.

Start

Connect to Prior Knowledge

Materials For each student: base-ten blocks (hundreds flats, tens rods, and ones units)

Why Support students' knowledge of using models to determine the number of hundreds, tens, and ones in a number.

How Have students count the hundreds, tens, and ones in groups of base-ten blocks and write the 3-digit number represented.

How many hundreds, tens, and ones? Write the number.

..... hundreds + ... tens + ... ones = ...

Solution

3 hundreds + 2 tens + 7 ones = 327

TRY IT

Make Sense of the Problem

To support students in making sense of the problem, have them identify how many balloons of each color Jan buys.

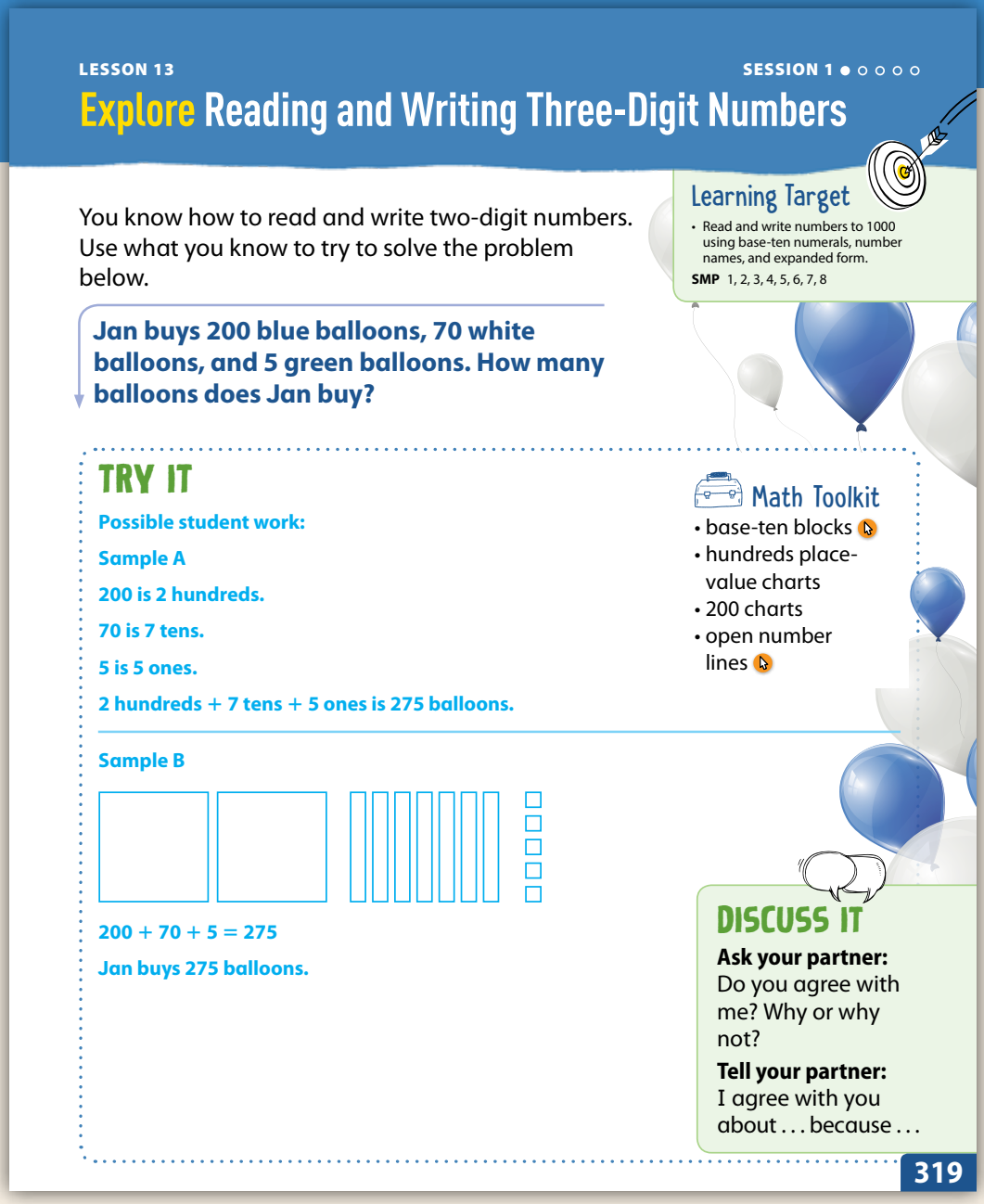
DISCUSS IT

Support Partner Discussion

To reinforce students' understanding of place value, have them use the terms *hundreds*, *tens*, and *ones* as they talk to each other.

Look for, and prompt as necessary, understanding of:

- 200 is 2 hundreds
- 70 is 7 tens
- 5 is 5 ones



LESSON 13 SESSION 1 ● ○ ○ ○ ○

Explore Reading and Writing Three-Digit Numbers

Learning Target

- Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

SMP 1, 2, 3, 4, 5, 6, 7, 8

You know how to read and write two-digit numbers. Use what you know to try to solve the problem below.

Jan buys 200 blue balloons, 70 white balloons, and 5 green balloons. How many balloons does Jan buy?

TRY IT

Possible student work:

Sample A

200 is 2 hundreds.

70 is 7 tens.

5 is 5 ones.

2 hundreds + 7 tens + 5 ones is 275 balloons.

Sample B

200 + 70 + 5 = 275

Jan buys 275 balloons.

Math Toolkit

- base-ten blocks
- hundreds place-value charts
- 200 charts
- open number lines

DISCUSS IT

Ask your partner: Do you agree with me? Why or why not?

Tell your partner: I agree with you about . . . because . . .

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Common Misconception Look for students who are not yet comfortable with composing numbers from hundreds, tens, and ones and write the digits 2, 7, or 5 using an incorrect place value. As students present solutions, have them specify how they determined the place value of each digit.

Select and Sequence Student Solutions

One possible order for whole class discussion:

- use base-ten blocks to count 2 hundreds, 7 tens, and 5 ones
- draw base-ten blocks and add 200 + 70 + 5
- add 2 hundreds + 7 tens + 5 ones
- add 200 + 70 + 5

Support Whole Class Discussion

Prompt students to note the relationship between the numbers in each model and the numbers in the problem.

Ask *How do [student name]'s and [student name]'s models show how many hundreds, tens, and ones are in the solution?*

Listen for 200 is 2 hundreds and can be shown with 2 hundreds flats. 70 is 7 tens and can be shown with 7 tens rods. 5 is 5 ones and can be shown with 5 ones units.

CONNECT IT

1 LOOK BACK

Look for understanding that Jan buys 275 balloons because the blue balloons are 2 hundreds, the white balloons are 7 tens, and the green balloons are 5 ones.

Visual Model

Use quick drawings as a visual model of base-ten blocks.

If . . . *students are unsure about numbers with hundreds, tens, and ones,*

Then . . . *use this activity to have them represent hundreds, tens, and ones using concrete and visual models.*

Materials For each pair: base-ten blocks (hundreds flats, tens rods, and ones units)

- Distribute base-ten blocks to students and ask them to show the number of balloons Jan buys using the blocks.
- Have students tell the blocks they used and justify their choices.
- Ask how they know each of the hundreds flats is equal to 100. [Students should see that each hundred flat is divided into 100 units.] Draw two squares and tell students that they can use a drawing to show hundreds. Point out the similar shape of the hundreds flats and the quick drawings of the squares.
- Repeat the process for the tens and ones.
- Tell students that the quick drawings are like the blocks, but without all the ones shown, to make them "quick" to draw.
- Have students make quick drawings of other three-digit numbers, such as 142 and 253.

2 LOOK AHEAD

Point out that the digit 4 in the hundreds place means 4 hundreds or 400; the digit 4 in the tens place means 4 tens or 40; and the digit 4 in the ones place means 4 ones or 4.

Students should be able to connect 400 + 40 + 4 to writing its value in standard form as 444, and connect 444 to its word form as *four hundred forty-four*.

Students will spend more time learning about the concept of place value in the Additional Practice.

CONNECT IT

1 LOOK BACK

How many balloons does Jan buy? 275

2 LOOK AHEAD

a. The digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 make up all numbers. The digit's place in a number tells its value. The same digit can have different values. Write the value of each 4 in this number.

Hundreds	Tens	Ones
4	4	4
400	40	4

b. The number can be written using only digits as 444.

c. The number can be written in **expanded form**. Complete the expanded form.

444 = 400 + 40 + 4

d. The number can be written as words. Complete.

four hundred forty-four

3 REFLECT

Gabe says the number in the place-value chart is 400404. Explain what Gabe's mistake is.

Gabe writes the values of each place in order, but he needs to add them together. The number shown in the place-value chart is 400 + 40 + 4, or 444.

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Close: Exit Ticket

3 REFLECT

Look for understanding that the values of the different places are added together to find the standard form and that the number with 4 hundreds, 4 tens, and 4 ones is the same as adding 400 + 40 + 4 and is written as 444.

Common Misconception **If** students write the standard form as 400404, **then** have them use a place-value chart for hundreds, tens, and ones and try to write 400404 in the chart. Point out that the number is too great and that now there are 0 tens instead of 4 tens.

Real-World Connection

Encourage students to think about everyday situations in which people would see a number broken into hundreds, tens, and ones. Students may suggest examples such as counting a large number of objects by grouping them into 100s or 10s, finding the total number of items that are packaged in groups of ten, or finding the total value of a group of $100, $10, and $1 bills.

Solutions

Support Vocabulary Development

1 Have students review the place-value chart they used in ***Connect It***. Encourage them to discuss what each place tells about the digits. Have students think of another three-digit number and create a place-value chart to include in the organizer. Have them discuss what the chart shows.

2 Have students read aloud the numbers 200, 50, and 7 to a partner. Underline 200, circle 50, and underline 7. Then read aloud each number while pointing to it. Help students think about the mathematical operation they need to apply (addition) in order to solve the problem. Point out that the number 257 stands for *two hundred fifty-seven*. Make connections to the place-value chart and three-digit numbers.

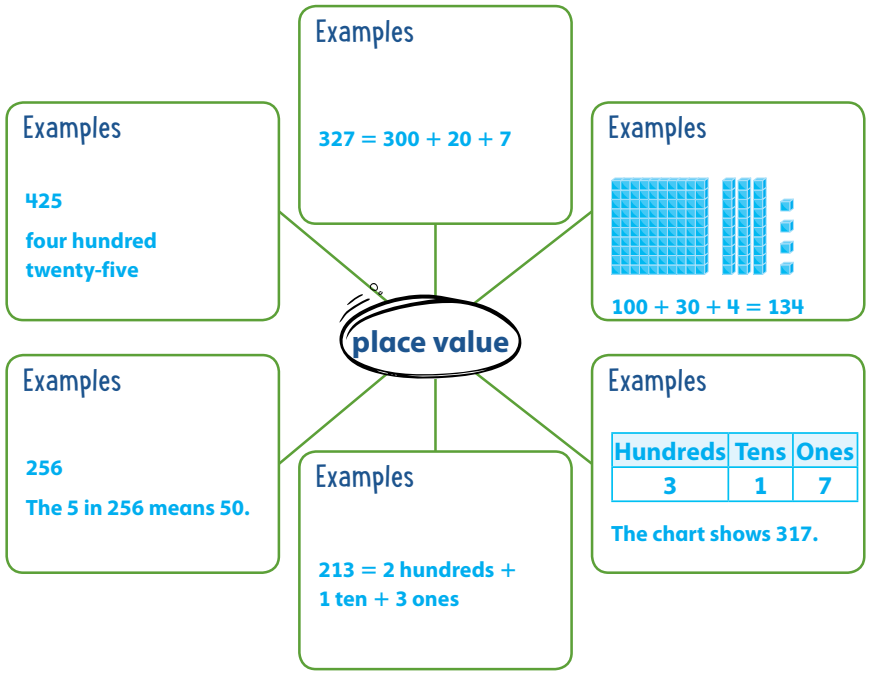
Supplemental Math Vocabulary

- *three-digit*

Name: _____ LESSON 13 SESSION 1

Prepare for Reading and Writing Three-Digit Numbers

1 Think about what you know about three-digit numbers. Fill in each box. Use words, numbers, and pictures. Show as many ideas as you can. **Possible answers:**



2 Bernadette writes this number as 200507. What is Bernadette's mistake?

Hundreds	Tens	Ones
2	5	7

Possible answer: Bernadette writes the place values in order, instead of adding them together. The number is 200 + 50 + 7, or 257.

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3 Assign problem 3 to provide another look at solving a problem about reading and writing three-digit numbers.

This problem is very similar to the problem about finding the number of balloons Jan buys. In both problems, students are given a word problem where they must add hundreds, tens, and ones to make a three-digit number. The question asks for the number of party hats Pavel buys.

Students may want to use base-ten blocks.

Suggest that students read the problem three times, asking themselves one of the following questions each time:

- *What is this problem about?*
- *What is the question I am trying to answer?*
- *What information is important?*

Solution: Pavel buys 397 party hats.
Medium

4 Have students solve the problem a different way to check their answer.

3 Solve the problem. Show your work.

Pavel buys 300 green party hats, 90 purple party hats, and 7 red party hats. How many party hats does Pavel buy?

Possible student work:

300 is 3 hundreds.

90 is 9 tens.

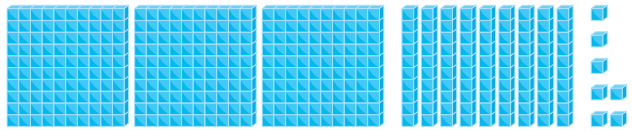
7 is 7 ones.

3 hundreds + 9 tens + 7 ones is 397.

Solution **Pavel buys 397 party hats.**

4 Check your answer. Show your work.

Possible student work:



300 + 90 + 7 = 397

Pavel buys 397 party hats.

ELL English Language Learners: Differentiated Instruction

Prepare for Session 2
Use with *Try It*.

Levels 1–3	Levels 2–4	Levels 3–5
Speaking/Writing Have students choral read the ***Try It*** problem. Ask: *Which bills should you count first—the ones, tens, or hundreds?* Have students think about the order of hundreds, tens, and ones in a place-value chart. Ask students to draw a representation to show how much money Amir wins. Then have students work in pairs to write their steps using the sequence terms *first*, *next*, *then*, and *finally*. When complete, have students share their work with another pair.	**Speaking/Writing** Have students read the ***Try It*** problem with a partner. Ask: *Which bills should you count first—the ones, tens, or hundreds?* Have students select an answer, share their response with a partner, and support their argument. When complete, ask students to draw a representation that supports their argument for which bills to add first. Have them revise their response as needed.	**Speaking/Writing** Have students read the ***Try It*** problem independently. Then have them discuss their ideas for solving it with a partner. As you listen to their discussion, ask: *Which bills should you add first? Why? What type of model could you use to solve the problem?* Have students write their steps to solve the problem using the model to support their answer. Have students use the sequence terms *first*, *next, then*, and *finally*.

LESSON 13

SESSION 2 Develop

Purpose In this session, students solve a problem that requires them to find the total value of 2 hundreds, 1 ten, and 3 ones. Students model the quantities either on paper or with manipulatives. The purpose of this problem is to have students develop strategies for connecting digits to the values that they represent so that they can find the value of three-digit numbers.

Start

Connect to Prior Knowledge

Materials For each student: Activity Sheet *Hundreds Place-Value Chart*

Why Support students' understanding of how to relate hundreds, tens, and ones to place values of three-digit numbers written in standard form.

How Have students count the hundreds, tens, and ones in the base-ten blocks pictured and then write the number represented by the model.

Use the place-value chart. Write how many hundreds, tens, and ones.

Solution
3 hundreds
7 tens
4 ones

Develop Language

Why Support students' understanding of the term *expanded form*.

How Explain to students that when something expands, it gets longer. The *expanded form* of a number is a longer way of writing it, by separating out the units, the tens, and the hundreds. For example, the longer or expanded form of 284 is 200 + 80 + 4. By using expanded form, you can clearly see that there are 2 hundreds, 8 tens, and 4 ones.

TRY IT

Make Sense of the Problem

To support students in making sense of the problem, have them identify how many of each bill Amir wins.

Ask *How many tens bills does Amir have? hundreds bills? ones bills?*

Develop Finding the Value of Three-Digit Numbers

Read and try to solve the problem below.

Amir plays a board game that uses play money. He wins 1 tens bill, 2 hundreds bills and 3 ones bills. What is the total value of the bills Amir wins?

TRY IT

Possible student work:

Sample A

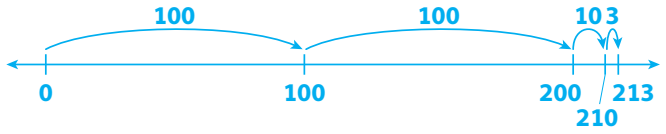
2 hundreds bills is $200. 1 tens bill is $10. 3 ones bills is $3.

$200 + $10 + $3 = $213

Amir wins $213.

Sample B

I jump one hundred twice. Then I jump ten. Then I jump to show 3 ones. I land on 213, so Amir wins $213.



Math Toolkit
- base-ten blocks
- play money bills
- hundreds place-value charts
- 200 charts
- open number lines

DISCUSS IT

Ask your partner: Can you explain that again?

Tell your partner: The strategy I used to find the answer was . . .

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DISCUSS IT

Support Partner Discussion

Encourage students to name the model or strategy they used as they talk to each other.

Support as needed with questions such as:

- *How did you show each of the bills Amir wins?*
- *Why might it be helpful to put the bills in order?*

Common Misconception Look for students who reverse the hundreds and tens digits and find a total value of $123.

Select and Sequence Student Solutions

One possible order for whole class discussion:

- using play money—$100, $10, and $1 bills
- making a quick drawing of hundreds, tens, and ones bills
- using an open number line to show jumps of 200, 10, and 3
- writing an addition equation that shows the total value

Explore different ways to understand finding the value of three-digit numbers.

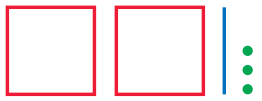
Amir plays a board game that uses play money. He wins 1 tens bill, 2 hundreds bills, and 3 ones bills. What is the total value of the bills Amir wins?

PICTURE IT

You can use play money to model the problem.

PICTURE IT

You can make a quick drawing to show hundreds, tens, and ones.



MODEL IT

You can show hundreds, tens, and ones in a chart.

Hundreds	Tens	Ones
2	1	3

Support Whole Class Discussion

Compare and connect the numbers in the word problem and student representations of the problem.

Ask *How does each model show the different numbers of bills? How does each model represent the total value of each type of bill?*

Listen for There are two hundreds flats, one ten rod, and three ones units drawn. On an open number line, the hundreds bills are shown as two jumps of 100, the tens bill is shown as a jump of 10, and the ones bills are shown as a jump of 3.

PICTURE ITS & MODEL IT

If no student presented these models, connect them to the student models by pointing out the ways they each represent:

- the 1 tens bill, the 2 hundreds bills, and the 3 ones bills
- putting together the hundreds, tens, and ones to find the total value of the bills.

Ask *How is the order of the bills in the models different than the order they are given in the problem?*

Listen for The models put the bills in order with the greatest value first and the least value last.

For using play money, prompt students to identify how each of the bills show their value.

- *Why are the numbers on the bills important?*
- *How can you find the total value of the bills?*

For making a quick drawing, prompt students to identify the parts of the drawing that show each type of bill.

- *How does the drawing resemble base-ten blocks?*
- *Why are some of the parts of the drawing shown in groups?*

For showing hundreds, tens, and ones in a chart, prompt students to connect the numbers in the problem with the numbers in the chart.

- *Why is the order of the numbers in the chart different than the order in the problem?*
- *Why are the ones shown in the last place on the chart?*

Deepen Understanding

Place Value

SMP 7 Look for structure.

When discussing the models, prompt students to consider why they are alike.

Ask *Why do you use three different bills to show 213? Why does the quick drawing use three different shapes? Why does the chart have three columns?*

Listen for There are three kinds of bills because you need a different kind for the hundreds, the tens, and the ones. The three shapes in the drawing each represent a different kind of bill. The columns in the chart show ones, tens, and hundreds, because Amir has bills for $100, $10 and $1.

Ask *How would the models change if Amir had 3 hundreds bills instead of 2?*

Listen for There would be one more $100 bill, one more red square in the quick drawing, and the number in the *Hundreds* column would be 3.

Generalize To help students understand place-value structure, discuss how different values of Amir's game winnings would affect the models. Listen for understanding that the number of ones, tens, and hundreds will correspond to the number in each place-value representation.

CONNECT IT

- Remind students that all the representations show the number of hundreds, tens, and ones.
- Tell students that on this page, they will use those representations to solve the problem.

Monitor and Confirm

1–2 Check for understanding that:

- all models show 2 hundreds, 1 ten, and 3 ones
- the value of the bills are 200 dollars, 10 dollars, and 3 dollars

Support Whole Class Discussion

3 Look for understanding that the sum of 200 + 10 + 3 has a 2 in the hundreds place, a 1 in the tens place, and a 3 in the ones place.

Ask *How do you find the total value of the bills by adding hundreds, tens, and ones?*

Listen for The hundreds bills are 200 dollars, the tens bill is 10 dollars, and the ones bills are 3 dollars. I write a 2, then a 1, and then a 3, which is 213.

4 Prompt students to understand that if Amir gets 2 more tens, he will have 3 tens. Instead of a 1 in the tens place, there will be a 3 in the tens place. The new total value of Amir's play money is 233 dollars.

5 REFLECT Have all students focus on the strategies used to solve this problem. If time allows, have students share their preferences with a partner.

Deepen Understanding

The Numbers 999 and 1,000

SMP 8 Use repeated reasoning

Use a place-value chart to discuss how to make the largest three-digit number and how to show one more.

Ask *What is the greatest three-digit number?*

Listen for 999 is the greatest three-digit number.

Ask *How can we show one more?*

Listen for Make another column before the hundreds. The chart will have 4 columns and the number will have 4 digits. Write the digit 1 and then three zeros to follow the pattern.

Generalize *What might be the name of this number?* Listen for students who may know 1,000 is one thousand. Model using 10 base-ten hundreds flats and skip-count by hundreds to 1,000.

CONNECT IT

Now you will use the problem from the previous page to help you find the value of three-digit numbers.

1 Look at the models on the previous page. How many hundreds, tens, and ones are there?

2 hundreds 1 ten 3 ones

2 What is the value of the hundreds bills? 200 dollars

What is the value of the tens bill? 10 dollars

What is the value of the ones bills? 3 dollars

3 Write an equation to find the total value of all the bills.

200 + 10 + 3 = 213 dollars

4 Amir wins 2 more tens bills. Tell how to write the new total value of Amir's play money.

233. Possible answer: Amir has 2 more tens. I add 2 to the tens digit. The value of Amir's bills was 213. When I add 2 to the tens digit, the value becomes 233.

5 REFLECT

Look back at your **Try It**, strategies by classmates, and **Picture Its** and **Model It**. Which models or strategies do you like best for finding the value of three-digit numbers? Explain.

Possible answer: I like using play money to model the problem. I can skip-count by hundreds, then tens, and then ones. The last number I say is the total amount Amir wins.

325

Hands-On Activity

Connect base-ten blocks and digit placement.

If . . . *students are having difficulty understanding visual models for the place values of three-digit numbers,*

Then . . . *use base-ten blocks to connect the place values of digits with a concrete model.*

Materials For each student: base-ten blocks, Activity Sheets *Hundreds Place-Value Mat, Digit Cards: 0–9*

- Distribute the materials and ask the students to show 3 hundreds, 2 tens, and 4 ones with base-ten blocks.
- Have them place the digit cards in the proper places on their charts to show the number. To connect the digits and their placement with the 3 hundreds flats, 2 tens rods, and 3 ones units, have students write the expanded form and its sum: 300 + 20 + 4 = 324.
- Repeat as necessary to solidify the concept. Include numbers such as 420 and 205 to reinforce the concept of 0 as a placeholder.

APPLY IT

For all problems, encourage students to draw some kind of model to support their thinking. Drawings can be very simple and students can use squares, lines, and circles for quick drawings.

6 See Student Worktext page.

7 Possible answers: 300 + 40 + 7, 347; Students could solve the problem by recognizing that 3 hundreds is 300, 4 tens is 40, and 7 ones is 7.

Close: Exit Ticket

8 8 has a value of 80 and means eighty when it is in the tens place of a number; 8 has a value of 800 and means eight hundred when it is in the hundreds place of a number; 8 has a value of 8 and means eight when it is in the ones place of a number. Students' examples could include the numbers 218, 281, and 812.

Students' solutions should indicate understanding of:

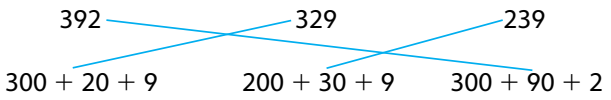
- the value of a digit is dependent upon its placement in a number
- the same digit can have different values in different numbers
- numbers can be expressed in standard form or in word form

Error Alert **If** students are unsure about numbers that have 8 as a value of 8, 80, or 800, **then** have students write the digit 8 in the different columns of a place-value chart to represent those values.

APPLY IT

Use what you just learned to solve these problems.

6 What is another way to show each number? Draw lines to connect each number to its expanded form.



7 Tia is playing a ring toss game to win tokens. She wins 3 hundreds tokens, 4 tens tokens, and 7 ones tokens. What is another way to write the total value of the tokens Tia wins? Show your work.

Possible student work:

3 hundreds is 300; 4 tens is 40; 7 ones is 7.

Solution **Possible solution: 300 + 40 + 7 = 347**

8 When does the digit 8 mean eighty? When does the digit 8 mean eight hundred? When does the digit 8 mean just eight?

Possible answer: 8 has a value of 80 when it is in the tens place, like in 281. 8 has a value of 800 when it is in the hundreds place, like in 812. 8 has a value of 8 when it is in the ones place, like in 218.

326

Solutions

1. 3 hundreds, 7 tens, 7 ones
Basic

2. 300 + 70 + 7 = 377; Students could write an equation by recognizing that 3 hundreds = 300, 7 tens = 70, and 7 ones = 7.
Basic

3. 377 dollars
Basic

Name: _____ LESSON 13 SESSION 2

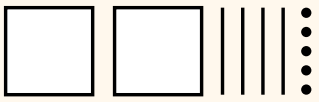
Practice Finding the Value of Three-Digit Numbers

Study the Example showing three-digit numbers in different ways. Then solve problems 1–6.

EXAMPLE

In a game, Jan pays money to the bank. She pays 2 hundreds bills, 4 tens bills, and 5 ones bills. What is the total value of the bills Jan pays?

Make a quick drawing.



Use a chart.

Hundreds	Tens	Ones
2	4	5

Write an equation.

200 + 40 + 5 = 245 dollars

Bob plays a board game that uses play money. He wins 3 hundreds bills, 7 tens bills, and 7 ones bills.

1. How many hundreds, tens, and ones are there?

3 hundreds 7 tens 7 ones

2. Write the total value of the bills using expanded form.

300 + 70 + 7 = 377

3. What is the total value of the bills Bob wins?

377 dollars

Vocabulary

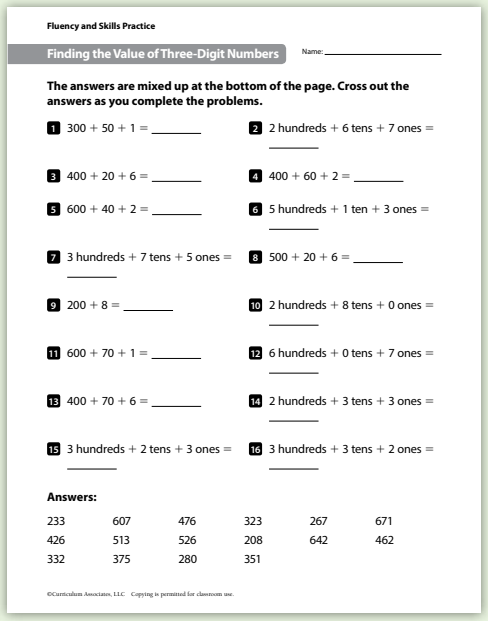
expanded form a way a number is written to show the place value of each digit.

Fluency & Skills Practice

Teacher Toolbox

Assign *Finding the Value of Three-Digit Numbers*

In this activity students practice writing a three-digit number in standard form given the number in expanded form. This skill is useful for developing students' understanding of the relationship between a digit in a number and the value of that digit.



Fluency and Skills Practice

Finding the Value of Three-Digit Numbers Name: _____

The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1. 300 + 50 + 1 = _____
2. 2 hundreds + 6 tens + 7 ones = _____
3. 400 + 20 + 6 = _____
4. 400 + 60 + 2 = _____
5. 600 + 40 + 2 = _____
6. 5 hundreds + 1 ten + 3 ones = _____
7. 3 hundreds + 7 tens + 5 ones = _____
8. 500 + 20 + 6 = _____
9. 200 + 8 = _____
10. 2 hundreds + 8 tens + 0 ones = _____
11. 600 + 70 + 1 = _____
12. 6 hundreds + 0 tens + 7 ones = _____
13. 400 + 70 + 6 = _____
14. 2 hundreds + 3 tens + 3 ones = _____
15. 3 hundreds + 2 tens + 3 ones = _____
16. 3 hundreds + 3 tens + 2 ones = _____

Answers:

233 607 476 323 267 671
426 513 526 208 642 462
332 375 280 351

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4 806 dollars; Students could recognize that 8 hundreds bills and 6 ones bills are equal to 8 hundreds and 6 ones and write those numbers in the chart. Since there are no tens bills, they would write 0 in the tens column. Then they would use the values of the places in the chart and find that 800 + 0 + 6 = 806.
Medium

5 Students could write 5 hundreds + 3 tens + 3 ones or write 500 + 30 + 3. They also might make a quick drawing showing 5 squares, 3 vertical lines, and 3 dots.
Medium

6 See student page.
Medium

4 Ali plays a board game that uses play money. He wins 8 hundreds bills and 6 ones bills. What is the total value of the bills Ali wins? Fill in the chart and then write the answer. Show your work.

Hundreds	Tens	Ones
8	0	6

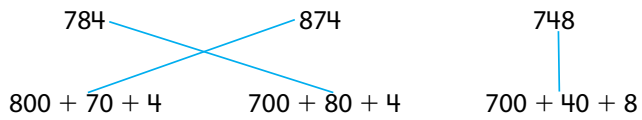
Possible work: 8 hundreds 0 tens 6 ones;
800 + 6 = 806

Solution 806 dollars

5 Audra has 533 comic books. Write or draw to show this number in a different way.

Possible answer:
5 hundreds + 3 tens + 3 ones. Students might also make a quick drawing showing 5 squares, 3 vertical lines, and 3 dots.

6 What is another way to show each number? Draw lines to connect each number to its expanded form.



ELL English Language Learners: Differentiated Instruction

Prepare for Session 3
Use with *Try It*.

Levels 1–3

Speaking/Writing Have students choral read the ***Try It*** problem. Refer to the anchor chart made in the previous lesson that shows different models for three-digit numbers. Ask students to form pairs and discuss which would be the best representation of 284. Then have them write a representation of 284 using numbers. Ask students to discuss how they can write the three-digit number using only words. Then have them write down the words and read them aloud. Provide the following sentence starter for guidance:

284 can be written as two hundred eighty-four.

Levels 2–4

Speaking/Writing Have students choral read the ***Try It*** problem. Refer to the anchor chart made in the previous lesson that shows different models for three-digit numbers. Have students decide on a model to represent 284, using numbers only. Provide the following sentence frame:

We chose to use a place-value chart because it shows the place value for each digit.

Then ask students to write 284 using words. Provide the sentence starter:

Another way to write 284 is two hundred eighty-four.

Levels 3–5

Speaking/Writing Have students read the ***Try It*** problem with a partner and discuss their ideas for solving it. Have pairs decide on two different models to represent 284, using numbers only. Provide students with a sentence frame to support their choice for each model:

I chose to use a place-value chart *because* it shows the place value for each digit.

Ask partners to read aloud their sentences to each other.

Have students write a complete sentence that describes how to write 284 using words. When complete, have pairs share their work with another pair.

LESSON 13

SESSION 3 Develop

Purpose In this session, students solve a problem that requires them to write 284 using words and using expanded form. Students model the problem on paper or by using manipulatives. The purpose of this problem is to have students deepen understanding and develop flexibility in working with three-digit numbers.

Start

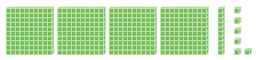
Connect to Prior Knowledge

Materials For each student: base-ten blocks (hundreds flats, tens rods, and ones units)

Why Support students' knowledge of using base-ten blocks to determine the number of hundreds, tens, and ones in a number, foreshadowing writing a three-digit number in another way by using numbers.

How Have students count the hundreds, tens, and ones in groups of base-ten blocks for a given number.

Write how many hundreds, tens, and ones.



416 = ... hundreds + ... tens + ... ones

Solution

4 hundreds + 1 ten + 6 ones

Develop Language

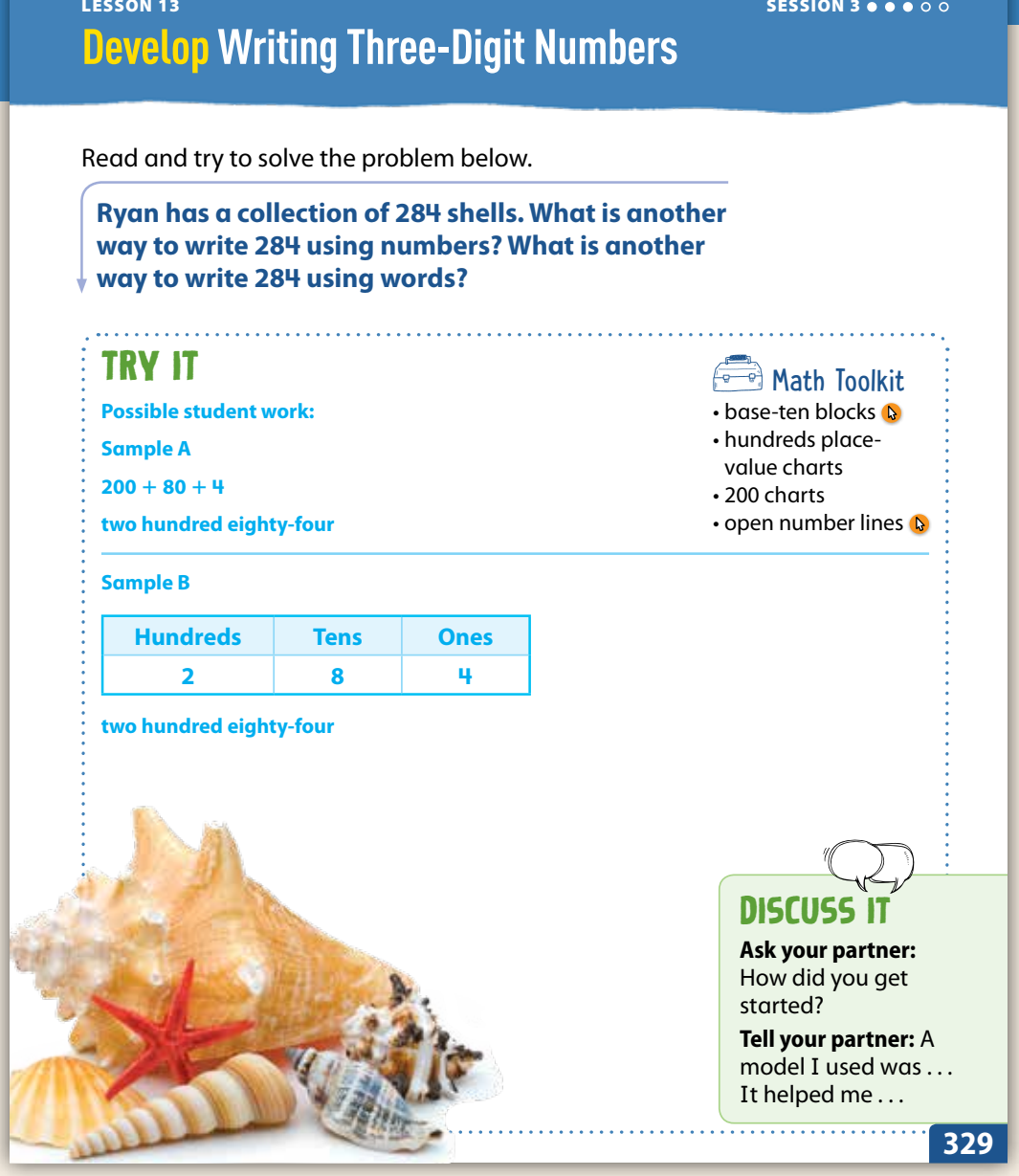
Why Clarify the meaning of the word *collection*.

How Have students circle the word *collection*. Explain that the word refers to a group of objects that are alike or related. In the problem, Ryan has a collection, or a group, of 284 shells.

TRY IT

Make Sense of the Problem

To support students in making sense of the problem, have them identify what they need to do.



LESSON 13 SESSION 3 ● ● ● ○ ○

Develop Writing Three-Digit Numbers

Read and try to solve the problem below.

Ryan has a collection of 284 shells. What is another way to write 284 using numbers? What is another way to write 284 using words?

TRY IT

Possible student work:

Sample A

200 + 80 + 4

two hundred eighty-four

Sample B

Hundreds	Tens	Ones
2	8	4

two hundred eighty-four

Math Toolkit
- base-ten blocks
- hundreds place-value charts
- 200 charts
- open number lines

DISCUSS IT

Ask your partner: How did you get started?

Tell your partner: A model I used was . . . It helped me . . .

329

DISCUSS IT

Support Partner Discussion

Encourage students to use the *Discuss It* questions and sentence starters on the Student Worktext page as part of their discussion.

Support as needed with questions such as:

- *Why did you solve the problem that way?*
- *Did your partner notice something you did not notice?*

Common Misconception Look for students who confuse the value of the digits and write the incorrect values for the number of hundreds, tens, and ones in 284.

Select and Sequence Student Solutions

One possible order for whole class discussion:

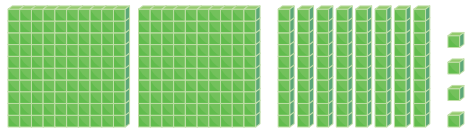
- using base-ten blocks to show the value of each digit and using words to name the blocks
- using quick drawings to show the value of each digit and using numbers to name the values
- using a place-value chart to write the number of hundreds, tens, and ones
- writing an addition expression

Explore different ways to understand writing three-digit numbers.

Ryan has a collection of 284 shells. What is another way to write 284 using numbers? What is another way to write 284 using words?

PICTURE IT

You can use base-ten blocks to show hundreds, tens, and ones. Then write the number in expanded form and in words.



200 + 80 + 4

two hundred eighty four

MODEL IT

You can show hundreds, tens, and ones in a chart. Then write the values in numbers and words.

Hundreds	Tens	Ones
2	8	4

2 hundreds + 8 tens + 4 ones

two hundred + eighty + four

Support Whole Class Discussion

Compare and connect the number in the word problem and how it is shown on student representations of the problem.

Ask *How does each number model show each digit in 284? How does each word model show each digit in 284?*

Listen for The number models shows 200 or 2 hundreds, and each word model has the words *two hundred*. The number models show 80, or 8 tens, and the word *eighty*, which is the same as 8 tens. The number models show 4 or 4 ones, and the word just says *four*.

PICTURE IT & MODEL IT

If no student presented these models, connect them to the student models by pointing out the ways they each represent:

- 284 in another way by using numbers
- 284 in another way by using words

Ask *How are the ways that 284 is shown by using words and numbers alike and different?*

Listen for The ways with numbers are alike because they show hundreds, tens, and ones. Some use just numbers, and some use the words *hundreds*, *tens*, and *ones*. The ways with words are alike because they use the same words. Some use addition symbols between the words for the hundreds and the tens and between the words for the tens and the ones.

For using base-ten blocks to show hundreds, tens, and ones, prompt students to explain how the base-ten blocks connect to the numbers and words for 284.

- *How are the hundreds, tens, and ones in 284 shown with base-ten blocks? With numbers? With words?*
- *How are the sums using numbers and words related to the base-ten blocks?*

For showing hundreds, tens, and ones in a chart, prompt students to explain how the numbers in the chart connect to the numbers and words for 284.

- *How are the hundreds, tens, and ones in 284 shown in the place-value chart? With numbers? With words?*
- *How are the sums using numbers and words related to the numbers in the chart?*

Deepen Understanding

Place-Value Chart

SMP 8 Use repeated reasoning.

When using the place-value chart as a model, prompt students to consider how it is labeled to show the number of hundreds, tens, and ones in 284.

Ask *Why is* Hundreds *the label for the left column? Why is* Tens *the label for the middle column? Why is* Ones *the label for the right column?*

Listen for *Hundreds* is the label at the left because the 2 shows the value of 2 in 284, which is 2 hundreds, or 200. *Tens* is the label in the middle because 8 shows the value of 8 in 284, which is 8 tens, or 80. *Ones* is the label at the right because 4 shows the value of 4 in 284, which is 4 ones, or 4.

Generalize *Will the digits be in the same order for any three-digit number whether you just write the number or write it in a place-value chart?* Listen for understanding that the values of the digits will be in the same order for any three-digit number because the hundreds, tens, and ones are in order from left to right in both the number and the place-value chart.

CONNECT IT

- Remind students that one thing that is alike about all of the representations is the number of hundreds, tens, and ones in 284.
- Tell students that on this page, they will use those representations to solve the problem.

Monitor and Confirm

1 – 2 Check for understanding that:

- The number of seashells Ryan has is 284 using only digits. This is called *standard form* because it is how we normally write numbers.
- 284 can be written in words by using the words for the value of each digit.
- The value of the 2 in words is *two hundred*. The value of the 8 in words is *eighty*. The value of the 4 in words is *four*. 284 written in words is *two hundred eighty-four*.
- The standard form and the word form have the same value.

Support Whole Class Discussion

3 Look for understanding that 284 can be written in as a number of hundreds, tens, and ones. It also can be written in expanded form by adding the values of the digits. This form is called *expanded form* because it shows the value of each digit in the number.

Ask *How many hundreds, tens, and ones are in 284?*

Listen for There are 2 hundreds, 8 tens, and 4 ones in 284.

Ask *How do you write the value of 284 in expanded form?*

Listen for I add the value of the hundreds (200), the value of the tens (80), and the value of the ones (4): 200 + 80 + 4 = 284.

4 REFLECT Have all students focus on the strategies used to write the number in different ways. If time allows, have students share their preferences with a partner.

CONNECT IT

Now you will use the problem from the previous page to help you understand how to write three-digit numbers in different ways.

1 Write the number of Ryan's shells using only digits.

Ryan has 284 shells.

2 Look at **Picture It** on the previous page. Write 284 using words.

two hundred eighty-four

3 Look at **Model It**.

a. How many hundreds, tens, and ones are there?

2 hundreds 8 tens 4 ones

b. Write the number in expanded form to show the total number of shells as an equation.

200 + 80 + 4 = 284

4 REFLECT

Look back at your **Try It**, strategies by classmates, and **Picture It** and **Model It**. Which models or strategies do you like best for writing three-digit numbers? Explain.

Possible answer: I like using a table to show the ones, tens, and hundreds for the number. That makes it easier to write the expanded form. Then I can write the words for the equation to help me write the number name.

Visual Model

Connect quick drawings with the expanded form and word form of numbers.

If . . . *students are having difficulty understanding the word form and expanded forms of three-digit numbers,*

Then . . . *use quick drawings to connect digits with expanded and word forms.*

- Write 427 on the board. Ask a volunteer to make a quick drawing for it. Ask: *What is the value of the four squares? How can you write that using numbers* or *words?* Have another volunteer write *400* and *four hundred* under the squares.
- Repeat the process for the 2 vertical lines and the 7 circles. Ask: *Which row under the quick drawing shows 427 in word form?* [The row with the words *four hundred twenty-seven*]
- Write addition signs between 400 and 20 and between 20 and 7. Ask: *Why can we use the addition signs?* [Because we combine the values of the hundreds, tens, and ones to get 427] *Why do you think this form is called* expanded form? [We have expanded how we write the number by adding the values of the hundreds, tens, and ones.]
- Repeat the activity with other numbers, including numbers such as 360 and 208.

APPLY IT

For all problems, encourage students to think about the different ways in which a three-digit number can be written using words and numbers.

5 Three hundred sixty-one; Students could first write 361 using expanded notation, as 300 + 60 + 1, and then write the word form for each addend.

6 100 + 10 + 8; Students could write 118 from the word form and then write out the sum of the hundreds, tens, and ones.

Close: Exit Ticket

7 **D**; Students could use the chart to write 570 as 5 hundreds + 7 tens and then use that notation to write *five hundred seventy*.

Students' solutions should indicate understanding that:

- three-digit numbers can be expressed as hundreds, tens, and ones
- a 0 in the ones column of a place-value chart indicates that there are no ones in the three-digit number and that the word form of the number will include only hundreds and tens

Error Alert **If** students chose **A**, **B**, or **C**, **then** remind them that a three-digit number with a zero in the ones place has a word form with the number of hundreds followed by the number of tens written as a decade number; *five seven zero* is not a number with hundreds and tens; *fifty-seven* means 5 tens and 7 ones; *five hundred seventeen* means 5 hundreds, 1 ten, and 7 ones.

APPLY IT

Use what you just learned to solve these problems.

5 There are 361 fish in the large tank at the aquarium. How do you write 361 in word form? Show your work.

Possible student work:

361 = 300 + 60 + 1

Solution **three hundred sixty-one**

6 Ella makes one hundred eighteen friendship bracelets. How would Ella write that number in expanded form? Show your work.

Possible student work:

Hundreds	Tens	Ones
1	1	8

Solution **100 + 10 + 8**

7 How do you write the number shown in the chart using words?

Hundreds	Tens	Ones
5	7	0

Ⓐ five seven zero

Ⓑ fifty-seven

Ⓒ five hundred seventeen

Ⓓ five hundred seventy

Solutions

1. 322; Students could use the chart to recognize that the number has 3 in the hundreds place, 2 in the tens place, and 2 in the ones place.
Basic

2. 300 + 20 + 2; Students could use the chart to recognize that 3 hundreds = 300, 2 tens = 20, and 2 ones = 2.
Basic

3. three hundred twenty-two; Students could write the number names as they read the word form of the number aloud.
Basic

Name: _____ LESSON 13 SESSION 3

Practice Writing Three-Digit Numbers

Study the Example showing how to write a three-digit number in different ways. Then solve problems 1–6.

EXAMPLE

In a video game, Eduardo scores 753 points.

Write this number three different ways.

Using only digits: 753

Using expanded form: 700 + 50 + 3

Using words:

seven hundred + fifty + three =
seven hundred fifty-three

Use the chart below for problems 1–3.

Hundreds	Tens	Ones
3	2	2

1. Write the number using only digits. 322

2. Write the number in expanded form.

300 + 20 + 2

3. Write the number using words.
Possible answer: three hundred twenty-two

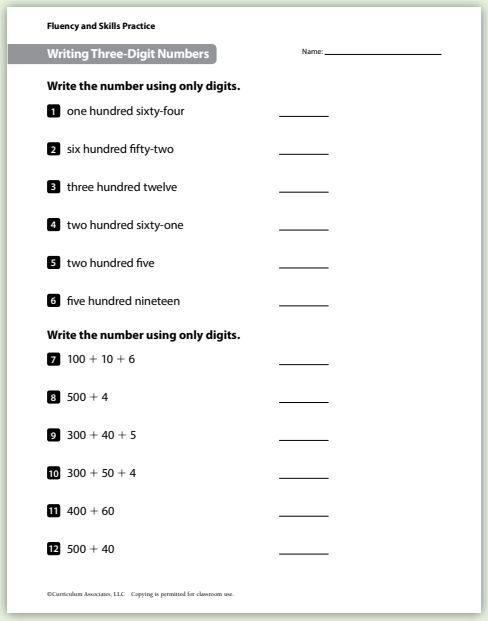
333

Fluency & Skills Practice

Teacher Toolbox

Assign *Writing Three-Digit Numbers*

In this activity students practice writing the standard form of a three-digit number given the word form. Through this practice, students build fluency in reading three-digit numbers, which is a skill they will encounter in a variety of situations in everyday life. They also practice writing the standard form of a three-digit number given the expanded form, and writing the expanded form when given the standard form. These are useful skills when they encounter comparing three-digit numbers in the next lesson.



Fluency and Skills Practice

Writing Three-Digit Numbers

Name: _____

Write the number using only digits.

1. one hundred sixty-four _____
2. six hundred fifty-two _____
3. three hundred twelve _____
4. two hundred sixty-one _____
5. two hundred five _____
6. five hundred nineteen _____

Write the number using only digits.

7. 100 + 10 + 6 _____
8. 500 + 4 _____
9. 300 + 40 + 5 _____
10. 300 + 50 + 4 _____
11. 400 + 60 _____
12. 500 + 40 _____

4 200 + 20 + 5; Students could use the chart to recognize that 2 hundreds = 200, 2 tens = 20, and 5 ones = 5.
Basic

5 703; seven hundred three; Students could recognize that there are no tens in the expanded form, which means there is a placeholder zero in the tens place of the standard form and only hundreds and ones in the word form of the number.
Medium

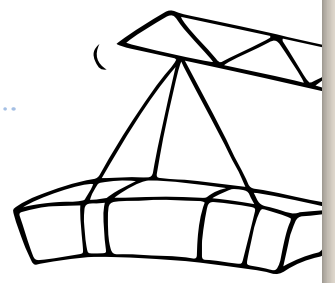
6 See student page.
Medium

4 There are 225 building bricks in a box.
How would you write 225 in expanded form?
Fill in the chart and then write the answer.

Hundreds	Tens	Ones
2	2	5

Possible work: 2 hundreds = 200; 2 tens = 20; 5 ones = 5

Solution 200 + 20 + 5



5 Helen counts her crayons. She writes the number as 700 + 3.
Write the number using only digits.

Solution 703

Write the number using only words.

Solution seven hundred three

6 What are other ways to show each number?
Look at each number shown using only digits. Draw a line to the expanded form and to the words for each number.

500 + 60 + 1	**651**	six hundred fifteen
600 + 10 + 5	**615**	five hundred sixty-one
600 + 50 + 1	**561**	six hundred fifty-one

ELL English Language Learners: Differentiated Instruction

Prepare for Session 4
Use with *Apply It*.

Levels 1–3

Listening/Speaking Have students choral read ***Apply It*** problem 1. Ask students to form pairs and draw a place-value chart. Then read the first clue aloud while pointing to each word. Ask students to work with their partners to decide what the digit should be and where it should be placed. Repeat the process with the second and third clues. Have pairs complete the sentence starter:

- *The secret number is* 942 .

Ask partners to take turns saying the sentence to each other.

Levels 2–4

Listening/Writing Have students choral read ***Apply It*** problem 1 in partners. Ask partners to draw a place-value chart. Have students read aloud the first clue and discuss their thoughts with their partners using the sentence frames:

- *I think the hundreds digit is* 9 *because* 1 plus 8 equals 9.
- *I think the tens digit is* 4 *because* 4 tens equals 40.
- *I think the ones digit is* 2 *because* 2 ones is 2.

Have pairs finish the problem by writing a complete sentence for the solution.

Levels 3–5

Reading/Writing Have students read ***Apply It*** problem 1 with a partner. Have partners discuss their ideas. Ask: *Which model from the three-digit anchor chart could you use to figure out the problem? Why?* Ask students to write the sentence frames below to support their answer while they work independently to solve the problem:

- *I think the hundreds digit is* 9 *because* 1 plus 8 equals 9.
- *I think the tens digit is* 4 *because* 4 tens equals 40.
- *I think the ones digit is* 2 *because* 2 ones is 2.

When finished, have students take turns reading their sentences to their partner.

LESSON 13

SESSION 4 Refine

Purpose In this session, students use different strategies to solve problems involving reading and writing three-digit numbers in different forms, sharing their thinking with a partner.

Start

Connect to Prior Knowledge

Why Support students' facility with expressing a three-digit number, given in one form, in a variety of other forms.

How Have students write the word form of numbers expressed in other forms.

Write these three numbers in word form.

Hundreds	Tens	Ones
7	2	3

6 hundreds + 4 tens + 5 ones

400 + 20 + 9

Solutions

seven hundred twenty-three; six hundred forty-five; four hundred twenty-nine

EXAMPLE

594; Students also could use a place-value chart to write the sum, 500 + 90 + 4 = 594.

Look for The word form of a number says the place values from greatest to least.

APPLY IT

1. 942; Students could solve the problem using a place-value chart, finding that the hundreds digit is 9 because 9 is 1 more than 8, the tens digit is 4 because 40 is the same as 4 tens, and the ones digit is 2 because the number has 2 ones.
DOK 2

Look for The clues describe the digits from the greatest place value to the least place value.

2. 300 dollars + 10 dollars + 2 dollars is $312; Students could solve the problem by naming the value of three $100 bills, one $10 bill, and two $1 bills.
DOK 1

Look for Grouping the bills in $100 bills, $10 bills, and $1 bills puts the hundreds, tens, and ones in order for writing the number in expanded form and standard form.

LESSON 13 SESSION 4 ● ● ● ● ○

Refine Reading and Writing Three-Digit Numbers

Complete the Example below. Then solve problems 1–3.

EXAMPLE

Mrs. Cole writes this number on a check.

five hundred ninety-four

How do you write this number using only digits?

You can show the number in a chart.

Hundreds	Tens	Ones
5	9	4

five hundred ninety-four

Solution The number is 594.

APPLY IT

1. Pat writes these clues about a three-digit number.
   - The hundreds digit is 1 more than 8.
   - The tens digit has a value of 40.
   - The number has 2 ones.

   What is the number? Show your work.

How many digits are in the number?

Possible work: 9 is 1 more than 8. 40 is 4 tens. 2 ones is 2.

Hundreds	Tens	Ones
9	4	2

Solution The number is 942.

335

3 Jim is playing a board game. This is his play money.

What is the value of each kind of bill in the problem?

Write the total as the sum of hundreds, tens, and ones.

300 dollars + 10 dollars + 2 dollars

Write the total using only digits.

312 dollars

3 Which is another way to write 700 + 6?

Ⓐ seventy-six

Ⓑ six hundred seven

Ⓒ seven hundred six

Ⓓ seven hundred sixty

How many tens does the number have?

Zoey chose Ⓐ as the answer. How did Zoey get her answer?

Possible answer: She wrote seventy instead of seven hundred. The number has only hundreds and ones. There are 0 tens.

3 **C**; Students could solve the problem by writing down the numbers given in expanded form, as they read them aloud.

Explain why the other two answer choices are not correct:

B is not correct because six hundred seven is the same as 607 and 607 ≠ 706.

D is not correct because seven hundred sixty is the same as 760 and 760 ≠ 706.

DOK 3

Close: Exit Ticket

Check for Understanding

Materials For remediation: base-ten blocks (4 hundreds flats, 7 ones units), Activity Sheet *Hundreds Place-Value Mat*

Ask students to solve the following problem:

Jamie is collecting pennies. She has 4 jars with one hundred pennies in each jar and 7 more pennies. How many pennies does Jamie have? [407 pennies]

For students who are still struggling, use the table below to guide remediation.

After providing remediation, check students' understanding using the following problem:

In a board game, each player gets $240 to start the game. How many hundreds bills, tens bills, and ones bills does each player get? [Possible answer: 2 hundreds bills, 4 tens bills, and no ones bills]

Error Alert

If the error is . . .	*Students may . . .*	*To support understanding . . .*
47	have placed the digits 4 and 7 together.	Provide students a place-value chart. Help them model the situation by writing in the chart the digit that represents the number of jars and the number of extra coins Jamie has. Assist students in writing the number correctly.
470	have written the 7 in the tens place instead of the ones place.	Help students write the value of the total number of coins in the jars and the extra coins in expanded form: 400 + 7. Help them see that there are no groups of ten, so they should write 400 with a 7 in the ones place.
11	have added the two numbers shown.	Use base-ten blocks to model the situation, ensuring the student recognizes the 100 ones in each hundreds block. Have students count by hundreds to find the total in the 4 hundreds blocks (or 4 jars) and then add the additional ones. Write the total in a place-value chart and as a sum.

Solutions

1 **C**; Students could identify that 800 represents an 8 in the hundreds place and 30 represents a 3 in the tens place.
Basic

2 **A**; Students could solve the problem by writing a 5 in the hundreds place; identifying that the tens digit is 8 because 8 is 1 less than 9; and then identifying that the only number greater than the 8 that is in the tens place is 9 and then placing 9 in the ones place.
Medium

3 **A**, **C**, **D**, **F**
Medium

Name: _____ LESSON 13 SESSION 4

Practice Reading and Writing Three-Digit Numbers

1 Which number is the same as 800 + 30?

Ⓐ 803
Ⓑ 83
Ⓒ 830
Ⓓ 308

Can you use a chart to help you?

2 Bev writes clues about a three-digit number.

- The number has 5 hundreds.
- The tens digit is 1 less than 9.
- The ones digit is greater than the tens digit.

What is the number?

Ⓐ 589
Ⓑ 598
Ⓒ 959
Ⓓ 590

In a three-digit number, where is the tens digit?

3 Which are true about the number 720?

Ⓐ It equals 72 tens.
Ⓑ It is 700 + 2.
Ⓒ It has 7 hundreds and 2 tens.
Ⓓ It is 700 + 20.
Ⓔ It is seventy-two.
Ⓕ It is seven hundred twenty.

How many hundreds, tens, and ones are in 720?

337

4 three hundred thirteen; Students may show that 300 is 3 hundreds, so the hundreds digit is 3; 1 less than 2 is 1, so the tens digit is 1; and the ones digit is the same as the hundreds digit, so the ones digit is 3. 300 + 10 + 3 = 313.
Medium

5 **D**; Students could solve the problem by writing 4 hundreds as 400 and 3 tens as 30. Zack chose the correct answer.

Explain why the other three answer choices are not correct:

A is not correct because the number 43 has 4 tens and 3 ones, not 4 hundreds and 3 tens.

B is not correct because the sum 400 + 3 shows 4 hundreds and 3 ones, not 4 hundreds and 3 tens.

C is not correct because it shows 3 ones instead of 3 tens.
Medium

4 Here are clues about a three-digit number.

- The hundreds digit has a value of 300.
- The tens digit is 1 less than 2.
- The ones digit is the same as the hundreds digit.

Write the number in words. Show your work.

Possible work: 300 is 3 hundreds, so the hundreds digit is 3. 1 less than 2 is 1, so the tens digit is 1. The ones digit is the same as the hundreds digit, so the ones digit is 3. 300 + 10 + 3 = 313.

Can you write an equation to help you?

Solution **The number is three hundred thirteen.**

5 What is another way to show 4 hundreds and 3 tens? Circle the correct answer.

Ⓐ 43

Ⓑ 400 + 3

Ⓒ 403

Ⓓ 400 + 30

Zack chose Ⓓ. How did Zack get his answer?

Possible answer: 4 hundreds = 400 and 3 tens = 30, so 4 hundreds and 3 tens can be shown as 400 + 30. Zack is correct.

How can you show 3 tens?

LESSON 13

SESSION 5 Refine

Purpose In this session, students further refine their skills for reading and writing three-digit numbers in different forms.

Start

Develop Fluency

Why Support students' facility with reading and writing numbers in different forms.

How Have students write a three-digit number in standard form. Then have them write that same number using expanded form and word form.

Write the same three-digit number in each of the following ways:

- standard form
- expanded form
- word form

Possible Solutions

893; 800 + 90 + 3; eight hundred ninety-three

APPLY IT

1 **A**; 2 hundreds are 200 and 5 ones are 5; the sum of 200 and 5 is the expanded form.

D; The standard form of a number with a 2 in the hundreds place and a 5 is in the ones place is 205.

DOK 1

2 See Student Worktext page.

DOK 1

3 **B**; *three hundred sixty* is the word form of 360.

C; 300 + 60 is the expanded form of 360.

D; 360 has a 3 in the hundreds place and a 6 in the tens place.

DOK 1

Refine Reading and Writing Three-Digit Numbers

APPLY IT

Solve the problems.

1 Which are other ways to show 2 hundreds and 5 ones?

Ⓐ 200 + 5

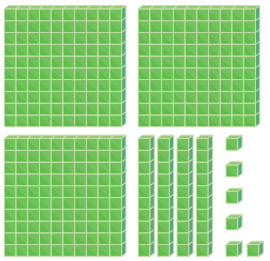
Ⓑ 25

Ⓒ 200 + 50

Ⓓ 205

Ⓔ 20 + 5

2 What does the model show? Fill in the chart and the blanks.



Hundreds	Tens	Ones
3	4	6

expanded form: 300 + 40 + 6

digits only: 346

3 A bear at the zoo weighs 360 pounds. Which are true about this number?

Ⓐ It is 300 + 6.

Ⓑ It is three hundred sixty.

Ⓒ It is 300 + 60.

Ⓓ It has 3 hundreds and 6 tens.

Ⓔ It is three hundred sixteen.

Differentiated Instruction

RETEACH

Hands-On Activity

Race to 500.

Students struggling with identifying hundreds, tens, and ones in numbers,

Will benefit from additional work using blocks to model three-digit numbers.

Materials For each student: Activity Sheet *Hundreds Place-Value Mat*; for each pair: base-10 blocks, 2 number cubes (1 white and 1 colored), at least 2 sets of 0–9 cards from Activity Sheet *Digit Cards: 0–9*

- Organize students into pairs. Distribute the materials. Instruct students to take turns rolling the cubes and using blocks to model what they roll.
- The white cube tells how many ones units students take, and the colored cube tells how many tens rods. They place digit cards on the mat to show the total.
- On subsequent rolls, students add the number of blocks rolled to what they have, organize their blocks into groups of ones, tens, and hundreds, and display with digit cards on the chart. Continue until one player reaches 500.

4 See Student Worktext page.
DOK 1

5 Possible explanation: The value of each digit is related to the place in which it appears in a number. The 2 in the first number has a value of 200; in the second number, it has a value of 20. The 7 in the first number has a value of 70, but in the second number, it represents 7 ones. There are 5 ones shown in the first number, but the 5 in the second number means it has a value of 500.
DOK 2

Close: Exit Ticket

6 MATH JOURNAL

Student responses should indicate understanding that the number has 7 hundreds, so the digit in the hundreds place is 7; 30 is the same as 3 tens so the value of the tens digit is 3; the value of the ones digit is less than both 7 and 3, so it can be 0, 1, or 2. Students could suggest possible answers of 730, 731, and 732.

Error Alert **If** students write the digits in the wrong places, **then** have students use the clues to write the digits in the correct columns of a place-value chart.

☑ SELF CHECK Have students consider whether they feel they are ready to check off any new skills on the Unit 3 Opener.

4 Write each number in expanded form.

275: 200 + 70 + 5

527: 500 + 20 + 7

5 Look at problem 4. Why do the 2, 5, and 7 have a different value in each number? Explain.

Possible answer: The 2, 5, and 7 are in different places in each number. So, the values are different in each number.

6 MATH JOURNAL

Here are clues about a three-digit number.

- The number has seven hundreds.
- The tens digit has a value of 30.
- The ones digit is less than any other digit in the number.

What could the number be? Explain.

Possible answer: The number could be 732. The number has 7 hundreds, so the hundreds digit is 7. 30 is 3 tens, so the tens digit is 3. The ones digit is less than 7 and less than 3. So the ones digit could be 2. Note: Students may also identify the number 731 or the number 730.

☑ SELF CHECK Go back to the Unit 3 Opener and see what you can check off.

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EXTEND

Challenge Activity

Explore beyond hundreds.

Students who have achieved proficiency with identifying the place-values of digits in three-digit numbers

Will benefit from deepening understanding of place-value by writing and reading four-digit numbers.

Materials For each student: hundreds place-value mat modified to show 4 place-value positions with only the *Ones*, *Tens*, and *Hundreds* columns labeled

- Challenge students to explore numbers greater than 999 by giving them a place-value chart showing 4 place-value positions. Have them determine the name for the first column and label it *Thousands*.
- Ask them to write digits for ones, tens, hundreds, and thousands.
- Tell students that their task is to write numbers with four digits in expanded form and read them using the proper place-value names.

PERSONALIZE

i-Ready

Provide students with opportunities to work on their personalized instruction path with *i-Ready* Online Instruction to:

- fill prerequisite gaps
- build up grade-level skills

Lesson Overview

LESSON 14

Compare Three-Digit Numbers

Lesson Objectives

Content Objectives

- Evaluate models of three-digit numbers to determine whether numbers are greater than, less than, or equal to each other.
- Express equalities and inequalities using proper notation.
- Solve problems involving inequalities and justify solutions.

Language Objectives

- Tell which of 2 three-digit numbers is greater and which is lesser.
- Write inequalities to compare three-digit numbers using $>$ and $<$ symbols.
- Listen to the ideas of others and ask questions to clarify.

Prerequisite Skills

- Identify place-value in three-digit numbers.
- Model three-digit numbers.
- Understand the concepts of greater than, less than, and equal to.

Standards for Mathematical Practice (SMP)

SMPs 1, 2, 3, 4, 5, and 6 are integrated in every lesson through the *Try-Discuss-Connect* routine.*

In addition, this lesson particularly emphasizes the following SMPs:

5 Use appropriate tools strategically.

6 Attend to precision.

7 Look for and make use of structure.

*See page 303k to see how every lesson includes these SMPs.

Lesson Vocabulary

- **greater than symbol (>)** a symbol used to compare two numbers when the first is greater than the second.
- **less than symbol (<)** a symbol used to compare two numbers when the first is less than the second.

Review the following key terms.

- **compare** to decide if numbers, amounts, or sizes are greater than, less than, or equal to each other.
- **equal sign (=)** a symbol that means *is the same value as*.

Learning Progression

In Grade 1 students explore the concept of greater than and less than, comparing place values of two-digit numbers. They record comparisons using the symbols for inequalities. Students learn the meaning of the equal sign and apply it to equations.

In Grade 2 students expand their understanding of numbers and place value as they explore three-digit numbers. They model, read, and write three-digit numbers in various forms, attending to the additional place-value position of the hundreds. Students further explore the concepts of equality and inequality as they measure and compare lengths.

In this lesson students compare three-digit numbers through picture models, charts, and by using the terms *greater than* and *less than*. Numbers are applied to a variety of settings, extending the concept of number beyond physical quantity. Students model situations involving inequalities using the appropriate symbol $>$ or $<$.

In Grade 3 and beyond, students apply their understanding of inequalities to fractions and decimals. They model inequalities on a number line and explore the meaning of the greater than, less than, or equal to symbols used in algebraic sentences.

Lesson Pacing Guide

Whole Class Instruction

SESSION 1 **Explore** *45–60 min*	**Interactive Tutorial*** *(Optional)* *Prerequisite Review:* Use Hundreds, Tens, and Ones **Comparing Three-Digit Numbers** • Start *5 min* • Try It *10 min* • Discuss It *10 min* • Connect It *15 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 345–346
SESSION 2 **Develop** *45–60 min*	**Ways to Compare Three-Digit Numbers** • Start *5 min* • Try It *10 min* • Discuss It *10 min* • Picture It & Model It *5 min* • Connect It *10 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 351–352 **Fluency** Ways to Compare Three-Digit Numbers
SESSION 3 **Develop** *45–60 min*	**More Ways to Compare Three-Digit Numbers** • Start *5 min* • Try It *10 min* • Discuss It *10 min* • Picture It & Model It *5 min* • Connect It *10 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 357–358 **Fluency** More Ways to Compare Three-Digit Numbers
SESSION 4 **Refine** *45–60 min*	**Comparing Three-Digit Numbers** • Start *5 min* • Example *10 min* • Apply It *25 min* • Close: Exit Ticket *5 min*	**Additional Practice** Lesson pages 361–362
SESSION 5 **Refine** *45–60 min*	**Comparing Three-Digit Numbers** • Start *5 min* • Apply It *15 min* • Small Group Differentiation *20 min* • Close: Exit Ticket *5 min*	**Lesson Quiz** or **Digital Comprehension Check**

Lesson Materials

Lesson *(Required)*	*Activity Sheet:* Hundreds Place-Value Mat
Activities	*Per student:* base-ten blocks, a list of 5–10 cities throughout the United States that are less than 1,000 miles from the town or city in which students live *Activity Sheets:* Hundreds Place-Value Chart, Hundreds Place-Value Mat, Three-Digit Number Cards, Digit Cards: 0–9
Math Toolkit	base-ten blocks, hundreds place-value charts, blank number lines, hundred charts
Digital Math Tools	Base-Ten Blocks, Number Line

Teacher Toolbox

Small Group Differentiation

PREPARE

Ready Prerequisite Lesson

Grade 1
- Lesson 22 Compare Numbers

RETEACH

Tools for Instruction

Grade 1
- Lesson 22 Compare Two-Digit Numbers

Grade 2
- Lesson 14 Compare and Order Three-Digit Numbers

REINFORCE

Math Center Activities

Grade 2
- Lesson 14 Compare Three-Digit Number Vocabulary
- Lesson 14 Compare Three-Digit Numbers

EXTEND

Enrichment Activity

Grade 2
- Lesson 14 Comparing by Reasoning

i-Ready

Independent Learning

PERSONALIZE

Learning Games
- *Zoom*
- *Bounce*

*We continually update the Interactive Tutorials. Check the Teacher Toolbox for the most up-to-date offerings for this lesson.

Connect to Family, Community, and Language Development

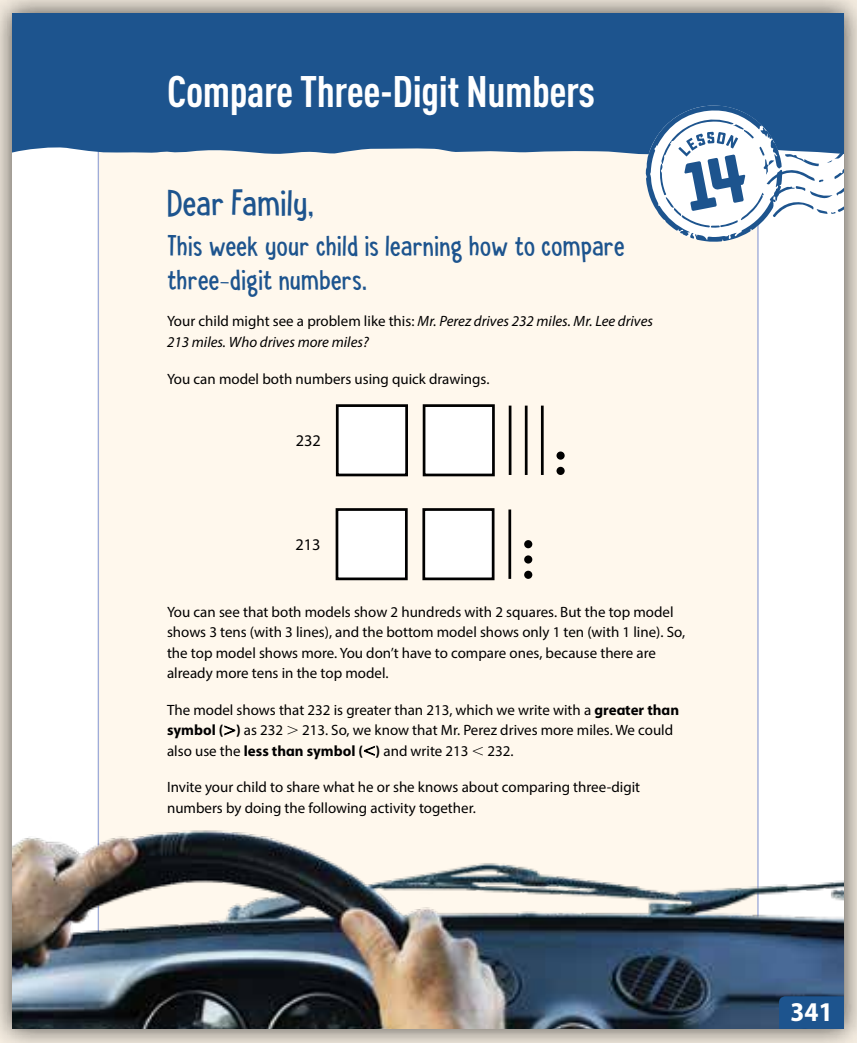
The following activities and instructional supports provide opportunities to foster school, family, and community involvement and partnerships.

Connect to Family

Use the **Family Letter**—which provides background information, math vocabulary, and an activity—to keep families apprised of what their child is learning and to encourage family involvement.

Available in Spanish

Teacher Toolbox



Compare Three-Digit Numbers

LESSON 14

Dear Family,

This week your child is learning how to compare three-digit numbers.

Your child might see a problem like this: *Mr. Perez drives 232 miles. Mr. Lee drives 213 miles. Who drives more miles?*

You can model both numbers using quick drawings.

232

213

You can see that both models show 2 hundreds with 2 squares. But the top model shows 3 tens (with 3 lines), and the bottom model shows only 1 ten (with 1 line). So, the top model shows more. You don't have to compare ones, because there are already more tens in the top model.

The model shows that 232 is greater than 213, which we write with a **greater than symbol (>)** as 232 > 213. So, we know that Mr. Perez drives more miles. We could also use the **less than symbol (<)** and write 213 < 232.

Invite your child to share what he or she knows about comparing three-digit numbers by doing the following activity together.

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ACTIVITY COMPARING THREE-DIGIT NUMBERS

Do this activity with your child to compare three-digit numbers.

Materials food or other items with (three-digit) weights listed on their labels (such as cans of fruit, boxes of dry cereal, or boxes of crackers), paper, pencil

- With your child, choose two items that seem to be about the same size. Write down the number of ounces and the number of grams inside, as shown on the label for each item.
- Ask your child to compare the number of ounces. Then have your child compare the number of grams. Encourage your child to use comparison words and symbols as shown in the table below. (For example: The number of grams for Cracker Brand A is greater than the number of grams for Cracker Brand B. 425 > 397)

<	>	=
is less than	is greater than	is equal to

Cracker Brand A Cracker Brand B

342

Goal

The goal of the Family Letter is for students to practice comparing three-digit numbers.

Activity

Understanding how to compare three-digit numbers will prepare students for more complex operations, such as adding and subtracting, involving these numbers. Look at the *Comparing Three-Digit Numbers* activity and adjust it if necessary to connect with your students.

Math Talk at Home

Encourage students to work with family members to identify household items that show three digit numbers, such as the number of grams of various food items, the temperature of an oven, and a microwave timer.

Conversation Starters Below are additional conversations starters students can write in their Family Letter or math journal to engage family members:

- *How many grams are there in a can of food or a box of cereal?*
- *Which item weighs more? Which one weighs less?*
- *What temperature do you cook pizza at? A casserole? Which temperature is higher?*

Connect to Community and Cultural Responsiveness

Use these activities to connect with and leverage the diverse backgrounds and experiences of all students.

Session 1 Use with *Try It*.

- Have students think of games, such as board games and video games in which points add up to three-digit numbers. Ask students to share with the class the game they identified. Have them describe how to get the most points. Encourage students to think of times they have won or lost. Have them share how they knew they had won or lost. Ask: *How did you compare your score to the other players' scores?*

Session 2 Use with *Try It*.

- Ask students to think of items they could count in their communities that would total more than 100, such as books in a library, boxes of cereal in a store, and plants and trees in a park. Then have students generate their own problems about comparing 2 three-digit numbers.

Connect to Language Development

For ELLs, use the Differentiated Instruction chart to plan and prepare for specific activities in every session.

ELL English Language Learners: Differentiated Instruction

Prepare for Session 1
Use with *Try It*.

Levels 1–3	Levels 2–4	Levels 3–5
Listening/Speaking Read the ***Try It*** problem with students. Point to Kim's results and read the numbers aloud. Ask: *What three-digit numbers can you make?* Have students work in pairs to generate ideas. Repeat the process with Jon's results. Then ask students to compare the possible number combinations to find Kim's and Jon's highest number. Next, have students compare who had the greater number by using the word *greater* in their conversations. Provide the following sentence frame as needed to encourage students to use complete sentences: _____ *is greater than* _____.	**Speaking/Writing** Read the ***Try It*** problem with students. Ask students to draw a two-column chart. Have them label the left column "Kim" and the right "Jon." Have students write number combinations for each person. Have them discuss which number combination is the greatest for Kim and which is the greatest for Jon using the term *greatest*. Then have students circle the largest number combination for each player. Have students write a response using the sentence frame: _____ *has the greater number because* _____.	**Reading/Writing** Have students read the ***Try It*** problem with a partner and discuss their ideas. Then ask them to write out their steps for determining who has the greater number using the sequence words *first*, *next*, *then*, and *finally*. When complete, have students exchange papers and read their partner's steps. Then ask them to write a response to their partner's work using the sentence starters: *I agree because* _____. *I disagree because* _____.

LESSON 14

SESSION 1 Explore

Purpose In this session, students draw on their knowledge of comparing two-digit numbers to compare a two-digit number and a three-digit number. They explore and share strategies for comparing two numbers to find which has a greater value. They look ahead to comparing numbers by place value and showing comparisons using the symbols $<$, $=$, and $>$.

Start

Connect to Prior Knowledge

Materials For each student: Activity Sheet *Hundreds Place-Value Chart*

Why Support students' facility with identifying hundreds, tens, and ones in a number, foreshadowing comparing numbers having three digits.

How Have students write a two-digit and a three-digit number in a place-value chart.

Write each number in the place-value chart.

34 283

Hundreds	Tens	Ones

Solutions

34 is shown as a 3 in the tens place and a 4 in the ones place.

283 is shown as a 2 in the hundreds place, an 8 in the tens place, and a 3 in the ones place.

TRY IT

Make Sense of the Problem

To support students in making sense of the problem, have them identify that the digits for Kim's number are 1, 2, and 4 and that the digits for Jon's number are 7 and 9.

DISCUSS IT

Support Partner Discussion

To reinforce students' understanding of place value, have them use the terms *hundreds*, *tens*, and *ones* as they talk to each other.

Look for, and prompt as necessary, understanding that:

- Kim's number will have 3 digits
- Jon's number will have 2 digits
- a two-digit number and a three-digit number are being compared with each other


LESSON 14

SESSION 1 ● ○ ○ ○ ○

Explore Comparing Three-Digit Numbers

Learning Target

- Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

SMP 1, 2, 3, 4, 5, 6, 7

You have learned how to compare two-digit numbers. Use what you know to try to solve the problem below.

Kim and Jon toss beanbags at a target. Who can make the greater number using the digits their beanbags land on?

Kim

1	2	3
4	5	6
7	8	9

Jon

1	2	3
4	5	6
7	8	9

TRY IT

Possible student work:

Sample A

Some numbers Kim can make: 124 or 421 or 412.

Numbers Jon can make: 97 or 79.

Jon's numbers are both less than 100. Kim's numbers are all greater than 100.

So, Kim can make a greater number.

Math Toolkit

- base-ten blocks
- hundreds place-value charts
- blank number lines
- hundred charts

Sample B

Hundreds	Tens	Ones
4	2	1
	9	7

Kim's greatest number is 421. Jon's greatest number is 97.

Kim's number is greater than Jon's.

DISCUSS IT

Ask your partner: How did you get started?

Tell your partner: I started by . . .

343

Common Misconception Look for students who write Kim's number with two digits like Jon's or write Jon's number with three digits like Kim's. As students present solutions, have them specify how they determined where to place each digit.

Select and Sequence Student Solutions

One possible order for whole class discussion:

- using base-ten blocks to model and compare the numbers
- using number cards on a chart to compare the numbers by place value
- comparing the number of hundreds, tens, and ones for each number
- writing the numbers in expanded form and comparing the hundreds, tens, and ones

Support Whole Class Discussion

Prompt students to note the relationship between the numbers in each model and the numbers in the problem.

Ask *How do [student name]'s and [student name]'s models show the number for Kim's digits? For Jon's digits? How did they compare the two numbers?*

Listen for Kim's greatest place value is hundreds. Jon's greatest place value is tens. Jon's number does not have any hundreds, so Kim's number is greater.

CONNECT IT

1 LOOK BACK

Who can make the greater number? Kim

2 LOOK AHEAD

Start with the greatest place value when you compare numbers.

A place-value chart can help you compare numbers.

Hundreds	Tens	Ones
0	8	9
1	5	2

a. Compare the hundreds to complete this sentence.

1 hundred is greater than 0 hundreds.

You can use =, < **(less than symbol)**, and > **(greater than symbol)** to compare numbers.

The symbol points toward the lesser number. It opens toward the greater number.

b. Write 152 and 89 in the correct spaces below.

89 < 152 152 > 89

3 REFLECT

Is a three-digit number always greater than a two-digit number? Explain.

Yes; Possible answer: A 3-digit number has 1 or more hundreds. A number with 1 or more hundreds is always greater than a 2-digit number which has 0 hundreds.

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CONNECT IT

1 LOOK BACK

Look for understanding that a three-digit number has hundreds and a two-digit number's greatest place value is tens. So, the three-digit number will be greater than the two-digit number.

Hands-On Activity

Use base-ten blocks to model two- and three-digit numbers.

If . . . *students are unsure about using place value to read and write three-digit numbers,*

Then . . . *use this activity to model three-digit numbers.*

Materials For each student: base-ten blocks, Activity Sheet *Hundreds Place-Value Mat*

- Have students volunteer the different possible numbers Kim could have made with the three digits she landed on. Write the list on the board: 124, 142, 214, 241, 412, 421.
- Discuss which of the possible numbers is greatest and have students put base-ten blocks on the place-value mat to show the number of ones, tens, and hundreds in that number.
- Repeat the activity for Jon's numbers: 79 and 97.
- Compare the blocks on the place-value charts for the two numbers. Ask: *Whose number has more hundreds?* [Kim's] *Whose number is greater?* [Kim's] *How do you know?*

2 LOOK AHEAD

Point out that 152 is greater than 89 because when the place values are compared, 152 has 1 hundred and 89 has 0 hundreds.

Students should be able to explain that > or < symbols always "point" to the smaller number and have an opening toward the greater number.

In the Additional Practice, students will spend more time learning about the concepts of and symbols for greater than, less than, and equal to.

Close: Exit Ticket

3 REFLECT

Look for understanding that a three-digit number is always greater than a two-digit number because a two-digit number always has 0 hundreds and a three-digit number has 1 or more hundreds.

Common Misconception **If** students are unclear in their explanations or explain that a two-digit number may be greater than a three-digit number, **then** have them model 152 and 89 using base-ten blocks to demonstrate that 152 is greater because it is the only number with hundreds.

Real-World Connection

Encourage students to think about everyday situations in which people would need to compare numbers. Students may suggest examples such as comparing the number of points scored in a game, comparing the number of objects in two containers, or comparing the number of votes in a school election.

Solutions

Support Vocabulary Development

1 Ask students to think about the terms *less than*, *greater than*, or *equal to*. Explain that each term has a symbol that represents it. Help students make connections by showing the symbols for addition and subtraction. Show students the *less than* symbol and ask them what it means. Repeat the same for the *greater than* and *equal* symbols.

2 Have students write 14 and 18. Ask them if 14 is greater than 18. Then have students refer to their graphic organizer in problem 1 to determine which sign is appropriate. Have students chorally read aloud the mathematical sentences they generate with the < and > symbols.

Supplemental Math Vocabulary

- *less than*
- *greater than*

Name: _____ LESSON 14 SESSION 1

Prepare for Comparing Three-Digit Numbers

1 Think about what you know about comparing numbers. Fill in each box. Use words, numbers, and pictures. Show as many ideas as you can. **Possible answers:**

Symbol	In My Own Words	Example
<	a symbol that shows one value is less than another	32 < 256
>	a symbol that shows one value is greater than another	132 > 56
=	a symbol that shows two values are equal	10 + 6 = 16

2 Compare 14 and 18 using the > symbol. Then compare 14 and 18 using the < symbol.

18 > 14; 14 < 18

345

3 Assign problem 3 to provide another look at building the greatest three-digit number given three digits.

This problem is very similar to the problem about tossing beanbags. In both problems, students are given a set of two digits and a set of three digits. The question asks students to build the greatest number possible with each set of digits.

Students may want to use number cubes or digit cards.

Suggest that students read the problem three times, asking themselves one of the following questions each time:

- *What is this problem about?*
- *What is the question I am trying to answer?*
- *What information is important?*

Solution: Victor can make the greater number.
Medium

4 Have students solve the problem a different way to check their answer.

3 Solve the problem. Show your work.

Victor rolls three number cubes. Sabra rolls two number cubes. Who can make the greater number using the digits they roll?

Possible student work using reasoning:

Sabra can make 26 or 62. Her numbers are both less than 100.

Victor can make three-digit numbers. His numbers are all greater than 100.

Solution **Victor can make the greater number.**

4 Check your answer. Show your work.

Possible student work:

Hundreds	Tens	Ones
5	4	3
	6	2

Victor can make 543. It has 5 hundreds. Sabra can make 62. It has no hundreds. So 543 is greater than 62.

ELL English Language Learners: Differentiated Instruction

Prepare for Session 2
Use with *Try It*.

Levels 1–3

Speaking/Reading Have students choral read the ***Try It*** problem. Have students form pairs and then discuss and solve the problem using the following sentence frames:

- *First, we draw a* place-value chart.
- *Next, we write* 352 *and* 328 *in the chart.*
- *Then we compare both* numbers.
- 328 *is less than* 352.

Ask students to draw and label a comparison showing 328 is less than 352.

Levels 2–4

Reading/Writing Have students choral read the ***Try It*** problem. Have students form pairs and solve the problem together. Then have the pairs complete the following sentence frames in writing to describe the steps they used to solve the problem:

- *First, we* draw a place-value chart.
- *Next, we* write each number in the chart.
- *Then we compare* both numbers.
- 328 *is less than* 352.

Have students read their responses to their partners.

Levels 3–5

Reading/Writing Have students read the ***Try It*** problem with a partner and discuss their ideas. Ask students to use the sequence words *first*, *next,* and *then* to write strategies they used to determine which person guessed the fewer number of jelly beans. Ask students to read what they have written to their partners. Have them use the terms *compare* and *less* in their written answer.

LESSON 14

SESSION 2 Develop

Purpose In this session, students solve a problem that requires them to compare 352 and 328. Students model the problem on paper or by using manipulatives. The purpose of this problem is to have students develop strategies for comparing three-digit numbers by place value.

Start

Connect to Prior Knowledge

Why Support students' knowledge of identifying the value of each digit in a three-digit number, foreshadowing using place value to compare three-digit numbers in which the hundreds are equal.

How Have students write three-digit numbers as the sum of hundreds, tens, and ones.

Write how many hundreds, tens, and ones in each number.

389 = ... hundreds + ... tens + ... ones

374 = ... hundreds + ... tens + ... ones

Solutions

389 = 3 hundreds + 8 tens + 9 ones;
374 = 3 hundred + 7 tens + 4 ones

Develop Language

Why Clarify that the word *less* is used to compare data.

How Remind students that in past lessons, they used the word *less* in subtraction problems. Point out that in this session, students are learning to compare data. Say: Less *is used to compare two numbers.* Ask students to think of two points of data they can compare using the word *less*, such as ages, heights, and distances.

TRY IT

Make Sense of the Problem

To support students in making sense of the problem, have them identify the numbers they are being asked to compare.

Ask *How many jelly beans does Bart guess? How many jelly beans does Diego guess?*

LESSON 14 SESSION 2 ● ● ○ ○ ○

Develop Ways to Compare Three-Digit Numbers

Read and try to solve the problem below.

There is a contest at the school fair. Students guess how many jelly beans are in a jar. Bart guesses 352 and Diego guesses 328. Which number is less?

TRY IT

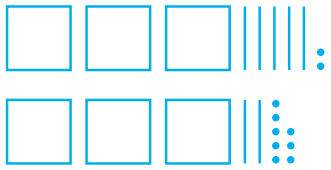
Possible student work:

Sample A

Hundreds	Tens	Ones
3	5	2
3	2	8

3 = 3, so I compare the tens next. 2 < 5, so 328 < 352.

Sample B



Both numbers have 3 hundreds. 352 has more tens, so 328 is less than 352.

Math Toolkit
- base-ten blocks
- hundreds place-value charts
- blank number lines
- hundred charts

DISCUSS IT

Ask your partner: Why did you choose that strategy?

Tell your partner: A model I used was . . . It helped me . . .

347

DISCUSS IT

Support Partner Discussion

Encourage students to use the terms *greater than* and *less than* as they talk to each other.

Support as needed with questions such as:

- *How many hundreds are in Bart's number? In Diego's?*
- *Does the number that is less have more tens or fewer tens?*

Common Misconception Look for students who say that 352 is less than 328 because the ones digit of 2 in 352 is less than the ones digit of 8 in 328.

Select and Sequence Student Solutions

One possible order for whole class discussion:

- base-ten blocks to model and compare the numbers
- quick drawings to model and compare the hundreds, tens, and ones in the numbers
- the digits of each number written in place-value charts to model the comparison
- each number written as the sum of hundreds, tens, and ones to compare addends

Support Whole Class Discussion

Compare and connect the numbers in the word problem to the student representations of the problem.

Ask *How does each model show 352 and 328?*

Listen for Both numbers have 3 hundreds flats. There are 5 tens rods drawn for 352 and 2 tens rods drawn for 328. The ones digits are shown in the last column of the place-value chart.

PICTURE IT & MODEL IT

If no student presented these models, connect them to the student models by pointing out the ways they each represent:

- Bart's guess of 352 and Diego's guess of 328
- a way to compare the two numbers

Ask *How does each model show the two numbers?*

Listen for Both models show the same number of hundreds for the two numbers. The base-ten blocks show a ten rod for each of the tens: 5 for 352 and 2 for 328. The number of ones written out is equal to the number in the ones place of each number.

For modeling the numbers with base-ten blocks, prompt students to explain how each model shows which number is less.

- *How do the hundreds flats help you find the number that is less?*
- *Why do the tens rods tell you which number is less?*

For writing the numbers as hundreds, tens, and ones, prompt students to explain how each equation tells which number is less.

- *How do you compare the equations to find the number that is less?*
- *Why is the number with more ones the number that is less?*

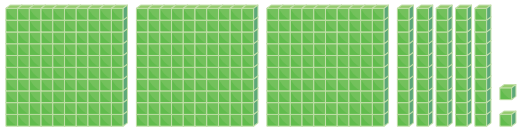
Explore different ways to understand comparing three-digit numbers.

There is a contest at the school fair. Students guess how many jelly beans are in a jar. Bart guesses 352 and Diego guesses 328. Which number is less?

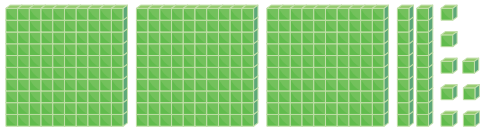
PICTURE IT

You can model the numbers with base-ten blocks.

352



328



MODEL IT

You can write the numbers as hundreds, tens, and ones.

352 = 3 hundreds + 5 tens + 2 ones

328 = 3 hundreds + 2 tens + 8 ones

348

Deepen Understanding

Compare Three-Digit Numbers

SMP 7 Look for structure.

When writing numbers as hundreds, tens, and ones, prompt students to consider how to compare the numbers by writing them as just tens and ones.

Ask *How could you write 352 and 328 as just tens and ones? How could you compare the tens in 352 and 328 to tell which number is less?*

Listen for 352 has 35 tens and 328 has 32 tens. 32 tens are less than 35 tens, so 32 tens + 8 ones is less than 35 tens + 2 ones.

Ask *How can you compare tens and ones in 563 and 567 to tell which is less?*

Listen for Both numbers have 56 tens, so 56 tens + 3 ones is less than 56 tens + 7 ones, because 3 ones are less than 7 ones.

Generalize *Can you always find which of 2 three-digit numbers is less by comparing the total number of tens?* Have students explain their reasoning. Listen for understanding that 2 three-digit numbers may have the same number of hundreds and tens, so comparing the ones will determine which of the two numbers is less.

CONNECT IT

- Remind students that one thing that is alike about all of the representations is the numbers that are being compared.
- Tell students that on this page, they will use those representations to solve the problem.

Monitor and Confirm

1 – 2 Check for understanding that:

- the number in the hundreds place of 352 and 328 is the same and cannot be used to find which number is less
- 352 has more tens than 328 because 5 tens is greater than 2 tens

Support Whole Class Discussion

3 Look for understanding that 328 is less than 352.

Ask *How did you decide where to write the numbers on each side of the < symbol?*

Listen for I know that the number 328 is less than the number 352. The greater number goes on the side where the < symbol is open.

4 Look for the idea that digits in the ones place of 2 three-digit numbers will only determine which number is less when the digits in their hundreds and tens places are the same. 352 and 328 both have 3 hundreds, but 352 has 5 tens and 328 has 2 tens. Since the digits in the tens place tell which number is less, the digits in the ones place do not need to be compared.

5 REFLECT Have all students focus on the strategies used to solve this problem. If time allows, have students share their preferences with a partner.

CONNECT IT

Now you will use the problem from the previous page to help you understand how to compare three-digit numbers.

1 Look at **Picture It** and **Model It** on the previous page. Can you use the numbers in the hundreds place to decide which number is greater? Why or why not?

No, because the hundreds are the same.

2 Now compare the tens. Which number has more tens?

352 has 5 tens and 328 has 2 tens. 352 has more tens.

3 Complete the comparison of 352 and 328.

328 < 352

4 Bart says 2 < 8, so 352 < 328. Is Bart correct? Explain.

No; Possible explanation: The 2 and 8 are in the ones place. You have to compare hundreds first. They are the same, so you compare tens. 2 < 5, so 328 < 352.

5 REFLECT

Look back at your **Try It**, strategies by classmates, and **Picture It** and **Model It**. Which models or strategies do you like best for comparing three-digit numbers? Explain.

Possible answer: I like modeling the numbers with the base-ten blocks because it is easy to compare the numbers. By just looking at the models, you can see which number is greater.

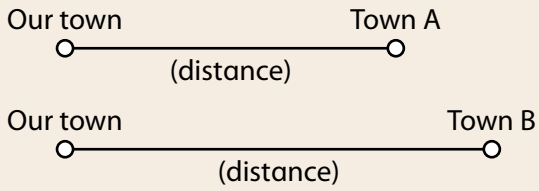
Visual Model

Compare numbers on a diagram.

If . . . *students are having difficulty comparing three-digit numbers,*

Then . . . *use a diagram to compare 2 three-digit numbers.*

- Write two towns on the board whose distances from your school are each greater than 100 miles but whose distances have the same number of hundreds.
- Draw a diagram similar to the one shown, using the names of the towns.



- Ask: *Which town is a greater distance from our town?* [Town B] *How do you know?* [The line is longer.]
- Have students write the comparison that represents this situation. Ask volunteers to share their comparisons. Discuss how one comparison using the > symbol and another using the < symbol can represent the same situation.

APPLY IT

For all problems, encourage students to compare numbers by writing comparisons using the symbols $<$ and $>$.

6 $761 > 716$ or $716 < 761$; Students could explain that both numbers have 7 hundreds, but the tens are different. Six tens is more than 1 ten, so 761 is greater than 716.

7 $487 > 478$, $478 < 487$. Students also could write *487 is greater than 478 or 478 is less than 487.*

Close: Exit Ticket

8 Possible explanation: Students could explain that the wrong comparison symbol was used because the opening is not toward the greater number, which is 283. Students also could indicate that the comparison may have been made using the digits in the ones place of the numbers instead of the tens place. The 8 in the tens place of 283 is greater than the 3 in the tens place of 238, so 283 is the greater number and there is no need to compare the ones.

Students' solutions should indicate understanding of:

- comparing digits in corresponding places, starting with hundreds
- using digits in corresponding places that are not equal to name which number is greater or less

Error Alert **If** students are unable to explain the mistake that Luz made, **then** have them write the two numbers in a place-value chart and compare the digits, starting with the hundreds place.

APPLY IT

Use what you just learned to solve these problems.

6 Compare 761 and 716 using $<$ or $>$. Explain why your comparison is true.

Possible answer: $761 > 716$ or $716 < 761$. Both numbers have 7 hundreds, but the tens are different. Six tens is more than 1 ten. So, $761 > 716$.

7 Write two ways to compare 487 and 478.

Possible answer: $487 > 478$ and $478 < 487$.

8 Luz is building a city out of plastic blocks. She uses 238 blocks for the school and 283 blocks for the fire station. She compares the two values: $238 > 283$. Explain the mistake Luz makes and write a correct comparison using $<$ or $>$.

Possible answer: Luz is using the wrong comparison symbol. 238 is less than 283, because 3 tens is less than 8 tens. The symbol doesn't "open" toward the greater number in Luz's comparison. A correct comparison would be $238 < 283$.

Solutions

1. See student page.
Basic

2. 8 tens is greater than 3 tens.
Basic

3. $482 > 439$
Basic

4. $439 < 482$
Medium

Name: _____ LESSON 14 SESSION 2

Practice Comparing Three-Digit Numbers

Study the Example showing how to compare three-digit numbers. Then solve problems 1–8.

EXAMPLE

Compare 217 and 234.

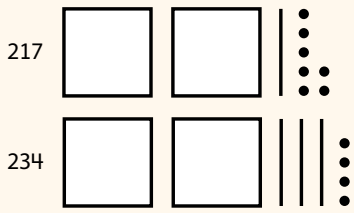
217 = 2 hundreds + 1 ten + 7 ones

234 = 2 hundreds + 3 tens + 4 ones

The hundreds are the same.
Compare the tens.

1 ten is less than 3 tens.

$217 < 234$



Cam has 482 marbles. Joe has 439 marbles.

1. How many hundreds, tens, and ones are in each number?

482 = 4 hundreds 8 tens 2 ones

439 = 4 hundreds 3 tens 9 ones

2. The hundreds are the same. Compare the tens.

8 tens is greater than 3 tens.

3. Complete the comparison. 482 > 439

4. Use the same numbers as problem 3. Write a different comparison. 439 < 482

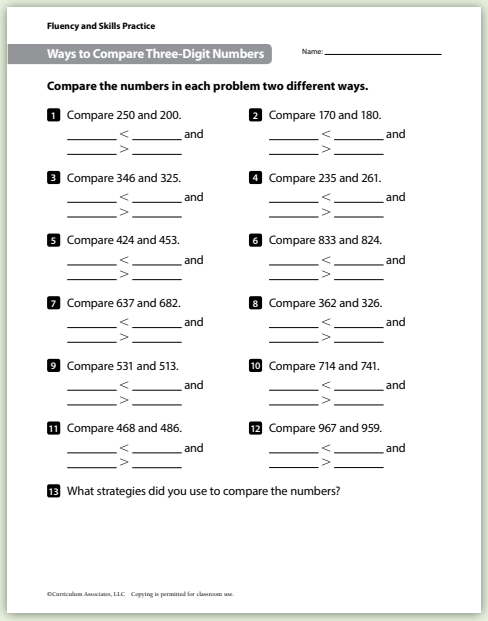
351

Fluency & Skills Practice

Teacher Toolbox

Assign *Ways to Compare Three-Digit Numbers*

In this activity students practice comparing 2 three-digit numbers which have the same hundreds digit. Through this practice, students build fluency in comparing three-digit numbers by place value.



Fluency and Skills Practice

Ways to Compare Three-Digit Numbers Name: _____

Compare the numbers in each problem two different ways.

1. Compare 250 and 200. _____ < _____ and _____ > _____
2. Compare 170 and 180. _____ < _____ and _____ > _____
3. Compare 346 and 325. _____ < _____ and _____ > _____
4. Compare 235 and 261. _____ < _____ and _____ > _____
5. Compare 424 and 453. _____ < _____ and _____ > _____
6. Compare 833 and 824. _____ < _____ and _____ > _____
7. Compare 637 and 682. _____ < _____ and _____ > _____
8. Compare 362 and 326. _____ < _____ and _____ > _____
9. Compare 531 and 513. _____ < _____ and _____ > _____
10. Compare 714 and 741. _____ < _____ and _____ > _____
11. Compare 468 and 486. _____ < _____ and _____ > _____
12. Compare 967 and 959. _____ < _____ and _____ > _____
13. What strategies did you use to compare the numbers?

5 See student page.
Basic

6 $172 < 195$
Medium

7 $926 < 938$ and $938 > 926$
Medium

8 Possible explanation: Both numbers have 9 hundreds, but the tens are different. 2 tens is less than 3 tens, so $926 < 938$. 3 tens is greater than 2 tens, so $938 > 926$.
Medium

Vince and Rina guess how many paper clips are in a box. Vince guesses 195, and Rina guesses 172.

5 How many hundreds, tens, and ones are in each number?

195 = 1 hundred 9 tens 5 ones

172 = 1 hundred 7 tens 2 ones

6 Complete the comparison.

172 < 195

Mel has 938 stamps in her stamp collection. Yuri has 926 stamps in his stamp collection.

7 Complete two different comparisons of 938 and 926.

926 < 938 and 938 > 926

8 Explain why your comparisons in problem 7 are true.

Possible answer: Both numbers have 9 hundreds, but the tens are different. 2 tens is less than 3 tens. So 926 < 938. 3 tens is greater than 2 tens. So 938 > 926.

ELL English Language Learners: Differentiated Instruction

Prepare for Session 3
Use with *Try It*.

Levels 1–3

Reading/Speaking Read the ***Try It*** problem with students. Have them form pairs and compare the numbers. Write both numbers on the board. Ask pairs to draw a square around the hundreds, circle the tens, and underline the ones digits for each number. Have them compare the digits in each place value for the numbers. Ask students to describe whether the digit in each place value in the first number is greater than, less than, or the same as the corresponding digit in the other number.

Provide a sentence frame for students to answer the problem:

Painting A has _____ votes.

Levels 2–4

Speaking/Writing Read the ***Try It*** problem with students. Have students form pairs. Ask: *What do you notice about both numbers? Which digit is in the hundreds, tens, and ones place? How do you know which number is greater?*

Have students write their steps for solving the problem using the sequence words *first*, *next*, *then*, and *finally*.

After students write their processes, ask them to read aloud their sentences to their partners.

Levels 3–5

Reading/Writing Have students form pairs, read the ***Try It*** problem with their partners, and then discuss their ideas. Ask students to discuss how to solve the problem. Then have them describe their process by using the sequence terms *first, next, then,* and *finally*.

Once completed, have students take turns reading aloud their explanations.

LESSON 14

SESSION 3 Develop

Purpose In this session, students solve a problem that requires them to compare 467 and 463. Students model the problem on paper or by using manipulatives. The purpose of this problem is to have students develop strategies for comparing digits by place value in order to determine which of 2 three-digit numbers is greater or less.

Start

Connect to Prior Knowledge

Why Support students' knowledge of naming the value of each digit in a three-digit number, foreshadowing using place value to compare 2 three-digit numbers in which the hundreds and tens are equal.

How Have students write numbers as a sum of hundreds, tens, and ones.

Write how many hundreds, tens, and ones in each number.

459 = ... hundreds + ... tens + ... ones

456 = ... hundreds + ... tens + ... ones

Solutions

459 = 4 hundreds + 5 tens + 9 ones

456 = 4 hundreds + 5 tens + 6 ones

Develop Language

Why Clarify that the word *more* is used to compare data.

How Remind students that in past lessons, they used the word *more* in addition problems. Point out that in this session, students are learning to compare numbers. The term *more* is used to compare against the term *less*. Have students think of two points of data they can compare using the term *more*, such as the number of teachers and students and the number of classrooms for each grade level.

TRY IT

Make Sense of the Problem

To support students in making sense of the problem, have them identify the numbers they are being asked to compare.

Ask *How many votes does Painting A have? Painting B?*

Develop More Ways to Compare Three-Digit Numbers

Read and try to solve the problem below.

These two paintings are in the school art contest. Which painting has more votes?

Painting A: 467 votes

Painting B: 463 votes

TRY IT

Possible student work:

Sample A

They have the same number of hundreds and the same number of tens.

7 ones is greater than 3 ones, so 467 is greater than 463. Painting A has more votes.

Sample B

467: 4 hundreds + 6 tens + 7 ones

463: 4 hundreds + 6 tens + 3 ones

The number of hundreds and tens are the same. 3 ones is less than 7 ones, so 463 is less than 467. Painting A has more votes.

Math Toolkit

- base-ten blocks
- hundreds place-value charts
- blank number lines
- hundred charts

DISCUSS IT

Ask your partner: Do you agree with me? Why or why not?

Tell your partner: I do not understand how . . .

DISCUSS IT

Support Partner Discussion

Encourage students to use the terms *digits*, *greater than*, and *less than* as they talk to each other.

Support as needed with questions such as:

- *How are the two numbers the same? How are they different?*
- *How does comparing the digits in the ones place help you to find the greater number of votes?*

Common Misconception Look for students who say that the paintings got the same number of votes because the digit in the hundreds place and the digits in the tens place of 467 and 463 are the same.

Select and Sequence Student Solutions

One possible order for whole class discussion:

- quick drawings to model and compare the numbers
- the digits of each number written in place-value charts to model the comparison
- each number written in expanded notation to compare the hundreds, tens, and ones
- comparison of the hundreds digits, then the tens digits, and then the ones digits

Support Whole Class Discussion

Compare and connect the numbers in the word problem and how they are shown on student representations of the problem.

Ask *Where does each model show 467? 463? The number that is greater?*

Listen for The models for both numbers show the same number of hundreds and the same number of tens. The digits in the ones place are different. The number with more ones is the greater number.

PICTURE IT & MODEL IT

If no student presented these models, connect them to the student models by pointing out the ways they each represent:

- 467 votes for Painting A
- 463 votes for Painting B
- a way to identify the greater of the two numbers

Ask *How do you find the greater number in each model?*

Listen for The quick drawing shows a different number of dots, or ones, for the two numbers. The place-value chart shows different numbers in the *ones* column for the two numbers.

For showing the numbers in a quick drawing, prompt students to identify where the models for each number are the same and different.

- *Why do the hundreds not help to identify the greater number? Why do the tens not help?*
- *How do the ones help to identify the greater number?*

For modeling the numbers in a chart, prompt students to identify how the place-value chart is used to find the greater number.

- *Why are there three columns in the chart?*
- *Why are the digits in the hundreds column of the place-value chart the same? The tens column?*

Explore more ways to understand comparing three-digit numbers.

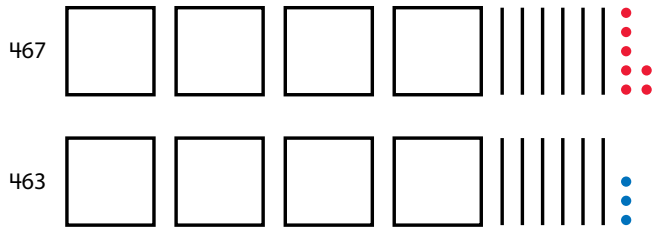
These two paintings are in the school art contest. Which painting has more votes?

Painting A: 467 votes

Painting B: 463 votes

PICTURE IT

You can show the numbers in a quick drawing.



MODEL IT

You can model the numbers in a chart.

Hundreds	Tens	Ones
4	6	7
4	6	3

Deepen Understanding

Compare Three-Digit Numbers

SMP 6 Attend to precision.

When modeling numbers in a chart, prompt students to consider how to compare the numbers by comparing their digits.

Ask *What do you compare first to find the greater number? Second?*

Listen for First compare the digits in the hundreds place. Then compare the digits in the tens place.

Ask *How do the hundreds digits in 467 and 463 compare? The tens digits? Which digits will tell you which of the 2 numbers is greater?*

Listen for The digit in the hundreds place of 467 and 463 is 4. The tens digit of 467 and 463 is 6. I need to compare the digits for the ones because the other digits are the same.

Generalize *How can you compare 2 three-digit numbers when the hundreds digits are the same and the tens digits are the same?* Listen for understanding that when the number of hundreds and the number of tens are the same, the ones digits must be compared. The number with more ones is greater.

CONNECT IT

- Remind students that one thing that is alike about all the representations is the numbers that are being compared.
- Tell students that on this page, they will use those representations to solve the problem.

Monitor and Confirm

1 – 2 Check for understanding that:

- there are the same number of hundreds and the same number of tens in 467 and 463
- the ones place is the greatest place with digits that are not equal, so comparing the digits in the ones place will determine which number is greater
- the comparison of 467 and 463 can be written two different ways

Support Whole Class Discussion

3 Be sure students understand that the problem is asking them to explain why there is more than one way to show the comparison of 467 and 463 using a symbol.

Ask *How does knowing that 7 is greater than 3 tell you how 467 and 463 compare?*

Listen for The number with 7 ones is greater than the number with 3 ones, so 467 > 463.

Ask *How does knowing that 3 is less than 7 tell you how 463 and 467 compare?*

Listen for The number with 3 ones is less than the number with 7 ones, so 463 < 467.

4 Look for the idea that the number that represents more votes corresponds to the greater of 467 and 463, which is 467.

5 REFLECT Have all students focus on the strategies used to solve this problem. If time allows, have students share their preferences with a partner.

CONNECT IT

Now you will use the problem from the previous page to help you understand more ways to compare three-digit numbers.

1 Which place do you need to look at to compare the numbers of votes? Why?

You need to look at the ones. The hundreds and tens are the same in both numbers.

2 Complete two different comparisons of 467 and 463.

467 > 463 463 < 467

3 Why can 467 and 463 be compared two ways?

Possible answer: If 467 is greater than 463, then 463 is less than 467.

4 Which painting has more votes? How do you know?

Painting A has more votes because 467 is greater than 463.

5 REFLECT

Look back at your **Try It**, strategies by classmates, and **Picture It** and **Model It**. Which models or strategies do you like best for comparing three-digit numbers in different ways? Explain.

Possible answer: I like using a chart to show the ones, tens, and hundreds for the number. Then it is easier to compare hundreds, then tens, then ones.

355

Hands-On Activity

Use digit cards to show comparisons of three-digit numbers.

If . . . *students have difficulty using the > symbol and the < symbol to show comparisons between 2 three-digit numbers,*

Then . . . *have them use digit cards to model pairs of three-digit numbers.*

Materials For each pair: 2 sets of number cards 0–9 from Activity Sheet *Digit Cards: 0–9*, 2 copies of Activity Sheet *Hundreds Place-Value Mat*

- Place all digit cards (0–9) face down and have each student draw 3 at random. With place-value mats side by side, ask each student to represent a three-digit number by placing his or her digit cards on a mat.
- Discuss the symbol cards as showing a greater number closest to its "open" side and a lesser number closer to its "pointed" side.
- Have pairs compare their three-digit numbers and decide how to place the symbol card between the two place-value mats.
- Repeat the activity several times. Monitor the comparisons that students make. Be sure that they use the < and > symbol cards correctly between the number pairs on their place-value mats.

APPLY IT

For all problems, encourage students to use pictures or models to support their thinking.

6 See Student Worktext page.

7 $772 < 774$ and $774 > 772$; Students also could use a quick drawing to show hundreds, tens, and ones for 772 and 774 or write the two numbers in expanded form to compare hundreds, tens, and ones.

Close: Exit Ticket

8 **B**, **C**; Students could write the numbers in a place-value chart or use base-ten blocks or quick drawings to check the comparisons.

Students' solutions should indicate understanding that:

- when 2 three-digit numbers have the same hundreds and tens digits, the comparison of the ones digits will tell which number is greater and which number is less
- when 2 three-digit numbers are not equal, there are two ways to show how they compare by using the $<$ and $>$ symbols.

Error Alert **If** students chose **A**, **D**, or **E**, **then** remind them the opening in the $>$ or $<$ sign is always next to the larger number and that for 2 three-digit numbers to be equal, they have to have the same number of hundreds, tens, and ones.

APPLY IT

Use what you just learned to solve these problems.

6 Write $>$ or $<$ to compare each pair of numbers.

a. 264 (<) 462 **b.** 372 (<) 379 **c.** 954 (>) 950

d. 876 (>) 867 **e.** 718 (<) 788 **f.** 653 (>) 553

7 Write two different ways to compare 772 and 774 using $<$ and $>$. Show your work.

Possible student work:

Hundreds	Tens	Ones
7	7	2
7	7	4

I compare digits in each place. 774 is the greater number, which means 772 is the lesser number.

Solution **772 < 774, 774 > 772**

8 Hope and Sara are collecting pennies. Hope has 189 pennies. Sara has 186 pennies. Which comparisons are correct?

Ⓐ $189 < 186$

Ⓑ $186 < 189$

Ⓒ $189 > 186$

Ⓓ $186 > 189$

Ⓔ $186 = 189$

356

Solutions

1. See student page.
Basic

2. 147 > 142
Basic

3. Possible answer: I had to compare the ones because the hundreds and tens digits are the same in both numbers.
Basic

Name: _____ LESSON 14 SESSION 3

Practice Comparing Three-Digit Numbers

Study the Example showing how to compare three-digit numbers. Then solve problems 1–8.

EXAMPLE

Compare 528 and 523.

The hundreds are the same.
The tens are the same.
Compare the ones.

8 ones is greater than 3 ones.

528 > 523 and 523 < 528

Hundreds	Tens	Ones
5	2	8
5	2	3

Ned and Vera are playing a game. Ned has 142 points, and Vera has 147 points.

1. Write the numbers in the chart.

Hundreds	Tens	Ones
1	4	2
1	4	7

2. Complete the comparison of 142 and 147.

147 > 142

3. Which place did you have to look at to compare 142 and 147? Why?

Possible answer: I had to compare ones. The hundreds and tens are the same in both numbers.

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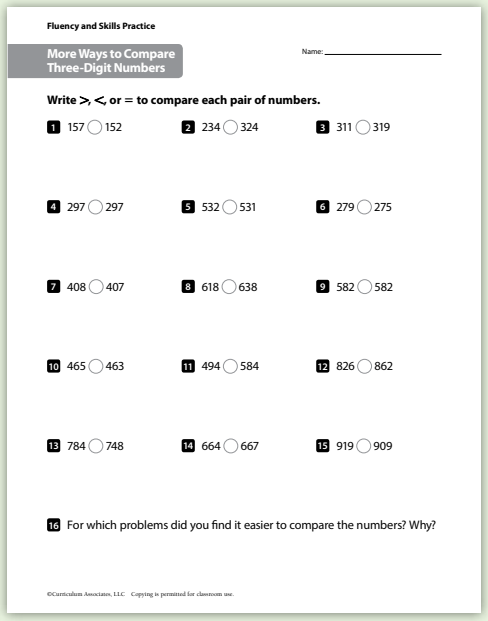
Fluency & Skills Practice

Teacher Toolbox

Assign *More Ways to Compare Three-Digit Numbers*

In this activity students practice comparing 2 three-digit numbers using the symbols >, <, or =. Many of the number pairs being compared share several digits in common. This develops the skill of attending to the place value of each digit with precision. Students may use this skill in real-world situations, such as comparing distances between cities or scores in a basketball game.


Fluency and Skills Practice

More Ways to Compare Three-Digit Numbers

Name: _____

Write >, <, or = to compare each pair of numbers.

1. 157 ◯ 152
2. 234 ◯ 324
3. 311 ◯ 319
4. 297 ◯ 297
5. 532 ◯ 531
6. 279 ◯ 275
7. 408 ◯ 407
8. 618 ◯ 638
9. 582 ◯ 582
10. 465 ◯ 463
11. 494 ◯ 584
12. 826 ◯ 862
13. 784 ◯ 748
14. 664 ◯ 667
15. 919 ◯ 909
16. For which problems did you find it easier to compare the numbers? Why?

4 $829 > 824$ and $824 < 829$
Medium

5 $353 > 351$ and $351 < 353$
Medium

6 $675 > 629$ and $629 < 675$
Medium

7 See student page.
Medium

8 Game 1 has the greatest score; Game 2 has the lowest score; Possible explanation: The greatest number of hundreds for the three scores is 3. 328 and 325 have the same number of hundreds and the same number of tens, so I compare the ones to find that $8 > 5$. Since $8 > 5$, $328 > 325$. 289 is the only score with two hundreds, so it is the lowest score.
Challenge

4 Complete two different comparisons of 824 and 829.

829 > 824 and 824 < 829

5 Complete two different comparisons of 353 and 351.

353 > 351 and 351 < 353

6 Complete two different comparisons of 675 and 629.

675 > 629 and 629 < 675

7 Write >, <, or = to compare each pair of numbers.

a. 465 < 467 **b.** 392 = 392

c. 885 > 882 **d.** 214 < 312

e. 691 = 691 **f.** 484 > 394

8 Han plays three games. Which game has the greatest score? Which game has the least score? Tell how you know.

Game 1: 328
Game 2: 289
Game 3: 325

Possible answer: Game 1 has the greatest score. Game 2 has the least score. 289 has 2 hundreds. The other numbers have 3 hundreds, so 289 is the least number. 328 and 325 have the same hundreds and tens. Since 8 > 5, 328 > 325, so 328 is the greatest number.

ELL English Language Learners: Differentiated Instruction

Prepare for Session 4
Use with *Apply It*.

Levels 1–3	Levels 2–4	Levels 3–5
Listening/Speaking Read ***Apply It*** problem 3 with students. Ask them to write Iman's number based on the written description. Then have students form pairs and discuss their steps for solving the problem. Encourage them to use the sequence words *first*, *next*, *then*, and the comparison phrases *less than* and *greater than*. When complete, have students discuss the possible answers that best reflect the comparison. Then ask students to discuss why Dan chose the wrong answer. Provide the following sentence frame for guidance: *Dan wrote* 3 hundreds 5 tens as 305 *instead of 350.*	**Reading/Writing** Read ***Apply It*** problem 3 with students. Ask them to write Iman's number based on the written description. Have students form pairs and write out their steps to solve the problem using the sequence words *first*, *next*, *then*, and the comparison phrases *less than* and *greater than*. When complete, have students read aloud their steps to their partners and circle the answer option that best reflects the comparison. Then ask students to write why Dan chose the wrong answer using the sentence frame: *Dan wrote* 3 hundreds 5 tens as 305 *instead of 350.*	**Reading/Writing** Have students read ***Apply It*** problem 3. Ask students to discuss their ideas with a partner. Help them extend their discussions by asking: *What would Iman's number look like if you wrote it using only numbers? Who had a greater number? Who had a smaller number? Which symbol would be incorrect to use? Why?* After students have discussed the problem, have them work with their partners to write a new problem on an index card. Then have pairs read and discuss their problem with another student pair.

LESSON 14

SESSION 4 Refine

Purpose In this session, students use different strategies to solve problems involving the comparison of three-digit numbers, first sharing their thinking with a partner and then working independently.

Start

Connect to Prior Knowledge

Why Support students' knowledge of showing comparisons symbolically, foreshadowing comparing three-digit numbers written in standard form.

How Have students relate two numbers in a place-value chart by showing the comparison with $<$ or $>$.

Use the chart. Write $>$, $<$, or $=$ to make each comparison true.

Hundreds	Tens	Ones
2	8	7
2	3	8

287 ..... 238 238 238

Solutions
287 $>$ 238;
238 $=$ 238

EXAMPLE

They each pack 250 oranges; neither person packs more than the other. Students also could use a place-value chart to compare 250 with 25 tens.

Look for 25 tens is the same as 2 hundreds and 5 tens.

APPLY IT

1. Sarita and Chen have the greatest scores; See Student Worktext page. Students also could eliminate 92 as having no hundreds and eliminate 213 as having only 1 ten, leaving the two greatest scores.
DOK 2

   Look for Finding the greatest number of hundreds and then the greatest number of tens will leave two scores.

2. Bella rides fewer miles than Ariel; Students also could solve the problem by recognizing that the hundreds digits and the tens digits are the same. Since $2 < 6$, $122 < 126$.
DOK 2

   Look for Fewer miles correspond to the number that is less.

LESSON 14 SESSION 4 ● ● ● ● ○

Refine Comparing Three-Digit Numbers

Complete the Example below. Then solve problems 1–3.

EXAMPLE

Yen packs 250 oranges in a box. Gia packs 25 bags of oranges with 10 oranges in each bag. Who packs more oranges?

Look at how you can find the number of oranges Gia packs.

25 bags with 10 in each bag = 25 tens
25 tens = 250
250 oranges in a box = 250

Solution Yen and Gia pack the same number of oranges.

APPLY IT

1. Write the number of hundreds and tens for each score in the table. Circle the names of the two players with the greatest scores.

Player	Score	Hundreds	Tens
Eden	92	0	9
Sarita	233	2	3
Paul	213	2	1
Chen	236	2	3

Remember to look at the hundreds place first.

3 **C**; Students could solve the problem by writing 305 as 3 hundreds + 5 ones and then recognizing that 5 tens are more than 0 tens, so 350 > 305.

Explain why the other two answer choices are not correct:

A is not correct because a number cannot be less than itself.

D is not correct because the symbol, <, must point at the lesser number, but 350 is not less than 305.

DOK 3

Close: Exit Ticket

Check for Understanding

Materials For remediation: hundreds place-value chart, hundred chart or number line

Ask students to solve the following problem:

Tory and Sam are playing a video game. At the end of the game, Tory has 228 points and Sam has 241 points. Write a comparison to show who has more points. [Sam; 241 > 228]

For students who are still struggling, use the table below to guide remediation.

After providing remediation, check students' understanding using the following problem:

Juan and his family travel 498 miles on a trip. Jay and his family travel 568 miles on a trip. Write a comparison to show who travels fewer miles.

2 Bella rides her bike 122 miles. Ariel rides her bike 126 miles. Who rides fewer miles? Show your work.

Are you looking for the lesser or greater number?

Possible work:

122 = 1 hundred 2 tens 2 ones

126 = 1 hundred 2 tens 6 ones

The hundreds and tens are the same. Compare ones. Since 2 < 6, 122 < 126.

Solution **Bella rides fewer miles than Ariel.**

3 Jill and Iman each write a three-digit number.

What number is the same as 3 hundreds 5 tens?

Jill's number: 305

Iman's number: 3 hundreds 5 tens

Which correctly compares Jill's and Iman's numbers?

Ⓐ 305 < 305

Ⓑ 305 > 350

Ⓒ 350 > 305

Ⓓ 350 < 305

Dan chose Ⓑ as the answer. How did Dan get his answer?

Possible answer: Dan thought 305 is greater than 350, but it should be 305 is less than 350.

Error Alert

If the error is . . .	*Students may . . .*	*To support understanding . . .*
241 < 228	not understand which inequality symbol should be used.	Review how the inequality symbol is always "gobbling up" the greater number or points to the lesser number.
241 < 228	have compared the ones place rather than the tens place.	Have the student write each number in a place-value chart. Compare the digits in each place value, reinforcing the importance of starting with the hundreds place. Remind the student that the digits in the tens place are only compared if the digits in the hundreds place are the same and that the digits in the ones place are only compared if the digits in the tens place are the same.
other answers	not understand the concept of greater than and less than.	Use physical models or models such as a hundred chart or a number line with one- and two-digit numbers to review and reinforce what it means to be greater than or less than. Put the number comparisons into situations familiar to the student to provide a meaningful context.

Solutions

1. Fran reads for more minutes. Students also could make a quick drawing to show the hundreds, tens, and ones for each number and then conclude that 7 tens is more than 1 ten, so 372 > 317.
Medium

2. **B** (False);
D (False);
E (True);
G (True)
Medium

3. **B**, **C**, **F**
Medium

Name: _____ LESSON 14 SESSION 4

Practice Comparing Three-Digit Numbers

1. In one week, Glen reads for 317 minutes. Fran reads for 372 minutes. Who reads for more minutes? Tell how you know. Show your work.

Are you looking for the lesser or greater number?

Possible work:

317 = 3 hundreds 1 ten 7 ones
372 = 3 hundreds 7 tens 2 ones
The hundreds are the same. So compare the tens. 1 ten is less than 7 tens.
So 317 < 372, or 372 > 317.

Solution **Fran reads for more minutes.**

2. Choose *True* or *False* to tell if the comparison is correct.

Which place value should you compare first?

	True	False
131 < 119	Ⓐ	Ⓑ
605 = 650	Ⓒ	Ⓓ
454 > 451	Ⓔ	Ⓕ
709 < 722	Ⓖ	Ⓗ

3. Marcy has 237 stickers. Then she gives some stickers away. How many stickers could Marcy have now?

Does Marcy have more than or fewer than 237 stickers now?

Ⓐ 239
Ⓑ 198
Ⓒ 229
Ⓓ 323
Ⓔ 237
Ⓕ 207

361

4 **D;** Possible explanation: Deb thought the 3 ones were 3 tens. She compared 420 to 430 and not to 403.
Medium

5 259; Possible explanation: I used the least digit for the greatest place, the hundreds. Then I used the next least digit, 5, for the tens place. 9 was left for the ones place.
Challenge

6 952
Medium

4 Which comparison is true?

Ⓐ 420 < 4 hundreds 3 ones

Ⓑ 370 > 407

Ⓒ 6 hundreds 4 tens < 640

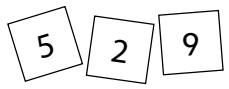
Ⓓ 919 < 991

Deb chose Ⓐ. How did Deb get her answer?

Possible answer: Deb is comparing the 2 in the tens place of 420 and the 3 ones in 4 hundreds 3 ones. There are no tens in 4 hundreds 3 ones, so 420 > 4 hundreds 3 ones.

You can rewrite the numbers that are shown as tens and ones.

5 Use the digits 5, 2, and 9 to make the least three-digit number that you can. Explain how you find your answer.



259; Possible explanation: I use the least digit, 2, for the hundreds place. 5 is less than 9, so I use 5 for the tens and 9 for the ones.

I think I will choose the digit for the hundreds place first.

6 Use the digits from problem 5 to make the greatest three-digit number that you can. Write your number below.

952

Which is the greatest digit?

LESSON 14

SESSION 5 Refine

Purpose In this session, students further refine their skills for comparing three-digit numbers in different forms.

Start

Develop Fluency

Why Support students' facility with comparing three-digit numbers and using comparison symbols.

How Have students write two comparisons for each of two pairs of three-digit numbers.

For each pair of numbers, write two different comparisons.

926 and 798

700 and 699

Possible Solutions

926 > 798, 798 < 926;
700 > 699, 699 < 700

APPLY IT

1 **A**; 431 has 1 more ten than 427.
C; 772 has more tens than 727.
DOK 2

2 **C**; 260 has 6 tens, which is more than 4 tens.
D; 252 has 5 tens, which is more than 4 tens.
DOK 2

3 **A** (True); 551 has more tens than 539.
D (False); 924 has more hundreds than 889.
E (True); The number of hundreds, tens, and ones is the same.
G (True); There are fewer ones in 422 than in 425.
DOK 2

Refine Comparing Three-Digit Numbers

APPLY IT

Solve the problems.

1 Which comparisons are true?

Ⓐ 431 > 427
Ⓑ 540 < 5 hundreds 4 ones
Ⓒ 727 < 772
Ⓓ 9 hundreds 6 tens < 906
Ⓔ 538 > 540

2 Phil has 248 trading cards. Sean has more trading cards than Phil. How many cards could Sean have?

Ⓐ 239
Ⓑ 228
Ⓒ 260
Ⓓ 252
Ⓔ 246

3 Choose *True* or *False* to tell if the comparison is correct.

	True	False
551 > 539	Ⓐ	Ⓑ
924 < 889	Ⓒ	Ⓓ
707 = 707	Ⓔ	Ⓕ
422 < 425	Ⓖ	Ⓗ

Differentiated Instruction

RETEACH

Hands-On Activity

Is it greater than or less than?

Students struggling with comparing three-digit numbers

Will benefit from additional work with using symbols to compare numbers.

Materials For each pair: 3 sets of 0–9 number cards and 1 set of >, <, and = cards from Activity Sheet *Digit Cards: 0–9*, Activity Sheet *Three-Digit Number Cards*

- Have each pair place the 0–9 cards and the three-digit cards facedown in separate piles.
- One student turns over 1 three-digit card. The other student takes 3 one-digit cards, forms a three-digit number, and puts the cards next to the three-digit card.
- The first student places one of the symbol cards between the numbers and explains the reasoning for the selection.
- Students mix the one-digit cards back into their pile. They repeat the activity, changing roles until all the three-digit cards have been used.

4 See Student Worktext page.
DOK 2

5 No; Possible explanation: The least number he can make is 148. After putting 1 in the hundreds place, the digit 4 should go in the tens place, because 4 < 8.
DOK 3

Close: Exit Ticket

6 MATH JOURNAL

Student responses should indicate understanding that when comparing 2 different three-digit numbers, first they compare digits in the hundreds place, then the digits in the tens place, and then the digits in the ones place. They also should show understanding that the comparison can be written using the < symbol to show which number is less than the other and the > symbol to show which number is greater than the other.

Error Alert **If** students are only able to write one comparison, **then** suggest that they write the numbers in reverse order and then choose the symbol, < or >, to show that the symbol points to the lesser number and has an opening toward the greater number.

SELF CHECK Have students consider whether they feel they are ready to check off any new skills on the Unit 3 Opener.

4 Use the numbers below to make true comparisons. Use each number only once.

380	308	390

390 > 386 38 tens = 380 308 < 384

5 Josh uses the digits below to make the least number he can. He writes 184. Is this the least number Josh can make? Explain.

4	1	8

No; Possible explanation: The least number he can make is 148. Since 148 has 4 tens and 184 has 8 tens, 148 < 184.

6 MATH JOURNAL

Write two different three-digit numbers. Then write two different comparisons of your numbers, using < and >. Explain how you know your comparisons are correct.

Possible answer: 235, 253; 235 < 253 and 253 > 235; The digits in the hundreds place are the same, so I compared the digits in the tens place next. 5 is greater than 3, so 253 is greater than 235. That means that 235 is less than 253.

SELF CHECK Go back to the Unit 3 Opener and see what you can check off.

EXTEND

Challenge Activity
How far is it?

Students who have achieved proficiency with comparing three-digit numbers

Will benefit from deepening understanding of comparing three-digit numbers by comparing more than two three-digit numbers.

Materials For each student: a list of 5–10 cities throughout the United States that are less than 1,000 miles from the town or city in which students live

- Challenge students to explore greater than and less than using distances between cities in the United States and the town or city in which they live.
- Have students find the distances and then compare to determine which city is the greatest and least distance from where they live.
- Ask students to record their findings and share them with each other, justifying their answers.
- Challenge students further by asking them to find a destination that is greater than the greatest distance among the cities they researched.

PERSONALIZE

i-Ready

Provide students with opportunities to work on their personalized instruction path with *i-Ready* Online Instruction to:

- fill prerequisite gaps
- build up grade-level skills