# TEACHER'S GUIDE Overview 

continued
> i-Ready Classroom Mathematics lessons consist of three types of sessions: Explore, Develop, and Refine. The following is a walkthrough of the planning and support features within the Teacher's Guide for a Develop session. You will find many of the same features in the Explore and Refine sessions.

## Lesson Overview provides

information for use in planning whole class instruction, small group differentiation, and independent learning opportunities.

Content Objectives identify the mathematical learning goals for the lesson, while Language Objectives indicate the language students are expected to understand and produce as they work on those goals.

Prior Knowledge are opportunities to monitor understanding and identify students' learning needs.

Math Vocabulary is defined in the context of lessons, and academic words can be explored using the Academic Vocabulary Routine.

## LESSON 14

## Overview | Compare Three-Digit Numbers

STANDARDS FOR MATHEMATICAL PRACTICE (SMP)
SMP 1, 2, 3, 4, 5, and 6 are integrated into the Try-Discuss-Connect framework.* This lesson provides additional support for: 6 Attend to precision.
7 Look for and make use of structure. * See page 315u to learn how every lesson includes
these SMP.

## Objectives

## Content Objectives

- Compare to determine whether three-digit 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

- Express comparison using is greater than, is less than, and is equal to during class discussion.
- Explain why two different numbers can be compared using either $>$ or $<$.
- Justify solutions to problems involving inequalities using the term place value.
- Use specific examples when disagreeing with an idea or solution strategy during partner discussion.


## Prior Knowledge

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

Learning Progression

## Learning Progression sets context for

 the mathematics of the lesson, providing information on how the content fits across and within grade levels-what students previously learned, what they are learning now, and what they will be learning next.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. Students further explore the concepts of equality and inequality as they measure and compare lengths. In this lesson students compare threedigit 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 $<$.
## Vocabulary

Math 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.

## Academic Vocabulary

symbol a mark that is used instead of a word or group of words.

## 353a

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## SESSION 3 Develop More Ways to Compare Three-Digit Numbers (45-60 min)

- Start ( 5 min )
- Try It ( $10-15 \mathrm{~min}$ )
- Discuss It (10-15 min)
- Connect It (15-20 min)
- Close: Exit Ticket (5 min)

Additional Practice (pages 369-370)

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

Presentation Slides ©

RETEACH or REINFORCE Hands-On Activity Materials For each pair: 2 sets of number cards 0-9 from Activity Sheets Digit Cards: 0-9 (a); 2 copies of Hundreds Place-Value Mat (B)

REINFORCE Fluency \& Skills Practice (©) EXTEND Deepen Understanding

SESSION 4 Refine Comparing Three-Digit Numbers (45-60 min)

- Start ( 5 min )
- Monitor \& Guide ( $15-20 \mathrm{~min}$ )
- Group \& Differentiate ( $20-30 \mathrm{~min}$ )
- Close: Exit Ticket (5 min)

Additional Practice (pages 375-376)Math Toolkit Have items from previous sessions available for students.

Presentation Slides ©

RETEACH Hands-On Activity
Materials For each pair: 3 sets of 0-9 number cards and 1 set of $>,<$, and = cards from Activity Sheets Digit Cards: 0-9 (d); Three-Digit Number Cards ©

REINFORCE Problems 4-8
EXTEND Challenge
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
\&i-Ready Personalized Instruction

## RETEACH Tools for Instruction (a)

REINFORCE Math Center Activity ©
EXTEND Enrichment Activity (1)

| Lesson 14 Quiz © or Digital Comprehension Check | RETEACH Tools for Instruction REINFORCE Math Center Activity EXTEND Enrichment Activity |  |
| :---: | :---: | :---: |
|  |  |  |
|  |  |  |
| OCurriculum Associates, LLC Copying is not permitted. | Lesson 14 Compare Three-Digit Numbers | 353b |

Reinforce understanding with Fluency \& Skills Practice, Apply It problems, and differentiated Math Center Activities. Hands-On Activities and Visual Models may also be useful in reinforcing mathematical concepts.

Reteach mathematical concepts using Hands-On Activities and Visual Models. Tools for Instruction also provide targeted skills instruction.

Extend mathematical concepts with Deepen Understanding, Challenge Activities, and Enrichment Activities.

## Optional Add-On: Personalized

Instruction resources provide students with opportunities to strengthen grade-level skills by working on their personalized path.

## The Lesson Quiz or Digital

 Comprehension Check assesses students' progress toward mastery of lesson content and is a way to identify where reteaching is needed.
# TEACHER'S GUIDE Overview 

continued

Purpose provides a roadmap of what students will be learning and doing across the session.

Start establishes a clear and accessible entry point for each session, engaging students mathematically with prerequisite content. It frequently is an opportunity to have students engage in a math talk.

## Develop Academic Language

provides language support for all students and is especially useful in helping EL students use and produce academic language.

## Support Partner Discussion

provides teachers with prompts to help students engage in meaningful peer discourse.

## Make Sense of the Problem

uses a language routine to help students understand the problem. See the Language Routines section on the Teacher Toolbox (under the Program Implementation tab) for suggestions on how to integrate language routines, teacher moves, and conversation tips during instruction.

## LESSON 14|SESSION 3 ■■■

Develop

## Purpose

- Develop strategies for comparing three-digit numbers by place value.
- Recognize that two different comparisons of 2 three-digit numbers can be written to show which of the numbers is greater or less.

START CONNECT TO PRIOR KNOWLEDGE


Possible Solutions
$A$ is the only number with 7 ones.
$B$ is the only number with 0 tens.
C is the only number with 3 hundreds.
D is the only number written as a sum.
WHY? Support students' understanding of place-value recognition in three-digit numbers.

## - DEVELOP ACADEMIC LANGUAGE

WHY? Guide students to be specific when they disagree with a solution strategy.
How? During Discuss It, ask students to identify the parts of their partner's solution that they disagree with, and why they think it is incorrect. Ask them to explain why they think it is incorrect, and to suggest how to correct it.

- Ithink $\qquad$ is incorrect because
- I would change $\qquad$


## TRY IT



## Make Sense of the Problem

Before students work on Try It, use Co-craft
Questions to help them make sense of the problem. As students share their questions, ensure they recognize that Painting A has 467 votes and Painting B has 463 votes.

Lesson 14
SESSION 3 • • ○
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?


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


## DISCU55 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 Strategies

One possible order for whole class discussion:

- quick drawings to model and compare 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


## Select and Sequence Student Solutions

 gives a range of possible strategies-from concrete to representational to abstractfor use in monitoring student work and facilitating discourse. This information can be used to make decisions about which models and strategies to
## Common Misconception

identifies misconceptions that lead to errors in understanding, which can then be addressed in whole class discussion as students are prompted to explain their reasoning.
share and discuss as a class.

## Facilitate Whole Class Discussion

Call on students to share selected strategies. After each strategy, allow individual think time for students to process the ideas.
Guide students to Compare and Connect the representations. Remind students to explain why they think the idea is incorrect, and to suggest how to correct it if they can.
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, have students analyze key features and then point out the ways each model represents:

- 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?

Lesson 14 develop

Explore more ways to understand comparing three-digit numbers.
These two paintings are in the school art contest.
Which painting has more 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 |

## DIFFERENTIATION | EXTEND

## Deepen Understanding Compare Three-Digit Numbers

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.

Ask/Listen for are mathematical discourse questions followed by expected student responses that support and facilitate whole class discussion.

As students share their thinking, the discourse questions can be used to make connections between student approaches and different models and representations, prompt justifications and critiques of approaches and solutions, and check conceptual understanding.

## Standards for Mathematical

 Practice (SMP) are infused throughout the instructional model.
## Deepen Understanding is a

 consistent opportunity to build conceptual understanding of a key lesson concept by extending mathematical discourse. The content connects a particular aspect of lesson learning to an SMP, showing how it looks in the classroom.
# TEACHER'S GUIDE Overview 

continued

## Monitor and Confirm

## Understanding is a way to ensure

 that students have made sense of mathematical learning goals.
## Facilitate Whole Class Discussion

provides a series of related discourse questions that illuminate the mathematical ideas of the lesson, prompting students to make connections and use that understanding to solve problems leading to abstract reasoning. These questions help students learn how to articulate a generalization of the mathematical concept.

## Hands-On Activities occur

 consistently at strategic points in the lesson after teachers have acquired understanding of students' learning through observation and their work on questions in the Student Worktext. The activities support students who are unsure of the concept and are an opportunity for small group reteaching while other students work independently. Use of concrete objects lets students access understanding in a different way.
## LESSON 14|SESSION 3 ■■■

## Develop

## CONNECT IT

SMP 2, 4, 5, 7

- 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 Understanding

(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


## Facilitate 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 numbers have the same hundreds and tens, so 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 numbers have the same hundreds and tens, so 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 Try It 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.

$$
467>463 \quad 463<467
$$

(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.

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.

## DIFFERENTIATION | EXTEND

5 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 Sheets
Digit Cards: 0-9 © ; 2 copies of Hundreds Place-Value Mat $\mathbb{A}$

- 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 solutions at point of use give a correct response with explanations that include multiple approaches to solving the problem.

## 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 $\mathbf{A}, \mathbf{D}$, or $\mathbf{E}$, 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.


## APPIY 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 | $\mathbf{7}$ | $\mathbf{2}$ |
| 7 | 7 | $\mathbf{4}$ |

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

Solution $772<774,774>772$
(8) N

Noel and Sara make origami animals. Noel makes 189 animals. Sara makes 186 animals. Choose all the correct comparisons.
(A) $189<186$
(B) $186<189$
(C) $189>186$
(D) $186>189$
(E) $186=189$

Close: Exit Ticket is a quick
formative assessment of each day's learning and serves as an indicator of students' progress toward mastery or partial mastery of the learning goal of the session.

This is the last question on the Student Worktext page.
$\square$

# TEACHER'S GUIDE Overview 

continued

Additional Practice can be used as in-class small group work, after class work, or at-home learning.

Solutions are labeled as Basic, Medium, and Challenge to show the relative difficulty level in relation to the questions at hand or the standard in question. Use these to support independent practice or differentiation as needed.

Fluency \& Skills Practice provides ongoing opportunities for students to accurately, flexibly, and efficiently practice mathematical procedures and operations. This can be used as in-class small group work, after-class work, or at-home learning. Student pages are available in the optional Fluency and Skills Practice Book or on Teacher Toolbox. Download PDFs or editable versions, or assign to any LMS, including Google Classroom.

## LESSON 14 |SESSION 3 ■■■ $\square$

## Additional Practice

## Problem Notes

Assign Practice Comparing Three-Digit Numbers as extra practice in class or as homework.
(1) S

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
$\qquad$ 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.

| Hundreds | Tens | Ones |
| :---: | :---: | :---: |
| 5 | 2 | 8 |
| 5 | 2 | 3 | $528>523$ and $523<528$

Marcos and Salam play a game. Marcos has 142 points, and Salam 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.

## Fluency \& Skills Practice

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 one or more digits in common Comparing numbers like these 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.


Learning Games


## Interactive Practice

Assign your students additional digital practice, as needed.

## Cumulative Practice

Assign Cumulative Practice to review major conten from previous units, as needed.

## tivi-Ready Personalized Instruction

A personalized instruction path helps students reinforce prerequisites and build grade-level skills.

Additional Practice Opportunities include digital Learning Games, Interactive Practice, Cumulative Practice, and i-Ready Personalized Instruction.
4. $829>824$ and $824<829$

Medium5 $353>351$ 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 l 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

## LESSON 14 SESSION 3

(4) Complete two different comparisons of 824 and 829 .

$$
829>824 \text { and } 824<829
$$

(5) Complete two different comparisons of 353 and 351.

$$
353>351 \text { and } 351<353
$$

(6) Complete two different comparisons of 675 and 629 .

$$
675>629 \text { and } 629<675
$$

(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) Moses 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
Game 1 has the greatest score. Game 2 has the least score. Possible
explanation: $\mathbf{2 8 9}$ 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

## DIFFERENTIATION \| ENGLISH LEARNERS

Levels 1-3: Speaking/Writing
Read Apply It problem 8 aloud as students follow along. Discuss the term least. If needed, explain using smallest. Provide students with cards for the digits $1,4,8$, one digit per card. Have them turn to a partner to find the least number they can make. Then have partners share with other pairs and compare their ideas. Have partners compare their number to Cris's number in the problem. Then have students use yes or no to answer the question and explain in writing using one of the sentence frames:

- Yes. The least number Cris can make is

$$
\begin{aligned}
& \text { - No, because the number___ is less than Cris's } \\
& \text { number. }
\end{aligned}
$$

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Levels 2-4: Speaking/Writing
Read Apply It problem 8 with students. Discuss the term least. If needed, explain using smallest. Provide students with cards for the digits $1,4,8$, one digit per card. Have them work with a partner to find the least number they can make. Have partners compare their number to Cris's number in the problem and discuss which number is less. Then have pairs respond in writing using the sentence frame:

- The least number Cris can make is because $\qquad$
Encourage students to explain their ideas using hundreds, tens, ones, less, more.

Have partners read Apply It problem 8. Encourage students to turn and talk to discuss the term least by brainstorming synonyms or similar terms they know. Provide students with cards for the digits $1,4,8$, one digit per card. Have them find the least number they can make. Then have students work with a partner to compare their number to Cris's number in the problem and discuss which number is less. Instruct students to respond in writing independently. Remind them to use because or since when explaining their thinking. Once complete, have students share with their partners to compare their responses.

DIFFERENTIATION |ENGLISH
LEARNERS helps teachers scaffold or amplify language in the next session so English learners can access and engage with grade-level mathematics.


[^0]:    Lesson 14 Compare Three-Digit Numbers

